

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,

Petitioner,

v.

VIDEO SOLUTIONS PTE. LTD.,

Patent Owner.

IPR2024-00194

U.S. Patent No. 9,204,099

**PATENT OWNER VIDEO SOLUTIONS PTE. LTD.
RESPONSE TO PETITION**

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EX2011	Joint Claim Construction and Prehearing Statement (Dkt. 75) submitted in <i>Video Solutions PTE. LTD. v. Cisco Systems, Inc.</i> , Case No. 2:23-cv-222-JRG pending in the U.S. District Court for the Eastern District of Texas
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I. INTRODUCTION

Patent Owner respectfully requests that the Board deny the Petition's challenge of claims 3-6 and 10 (the "Challenged Claims") of U.S. Patent No. 9,204,099 ("the '099 Patent") because the Petition fails to meet its burden of establishing unpatentability of any of the Challenged Claims. As an initial matter, despite asserting that no claim construction is needed in these IPR proceedings, such as for "the conference participants," Petitioner has subsequently requested that term be construed in co-pending litigation in a way that is inconsistent with its obviousness arguments in the Petition. In addition, further support for the proper construction of terms, such as Elements [3.4] and [10.3], which the Board indicated would be beneficial and which is provided herewith, also demonstrates that the Grounds are deficient. Moreover, Grounds 1-4 of the Petition are rooted in impermissible hindsight bias—using the claims as a roadmap while ignoring fundamental differences between the Challenged Claims and the asserted references and proposing combinations of and modifications to these references that are inconsistent with and run contrary to their own teachings. The critical differences between the Challenged Claims and the asserted references, as well as the shortcomings of the disclosures of the references themselves, are presented and readily apparent from the evidence and arguments submitted herewith, including

testimony from Petitioner's own expert, Dr. Reddy. In sum, the Board should not cancel any of the Challenged Claims because the Petition does not establish that any of these claims are obvious or otherwise unpatentable.

II. OVERVIEW OF THE '099 PATENT

The Challenged Claims of the '099 Patent are generally directed to teleconferencing systems that include both mesh-connected and non-mesh endpoints, which permit non-mesh connected endpoints to participate in a videoconference as if they were part of the mesh topology. *See, e.g.*, EX1001, 17:47-58. As described in the background section of the '099 Patent, prior art teleconferences were hosted by a type of central server, such as a Multiparty Control Unit (MCU), also known as a Multipoint Conference Unit. *Id.*, 1:34-36. In such a configuration, the MCU consolidates all the video feeds from the endpoints interconnected in a star, or multi-star, topology. *Id.*, 1:36-39, 2:34-35. Other prior art teleconferencing systems connect endpoints in a full mesh topology such that “each endpoint is connected directly to each other endpoint in the conference,” which allows for each mesh-connected endpoint to have “complete freedom to present video and other collaboration material uniquely and independently of the way it is presented at other endpoints.” *Id.*, 2:36-40. However, prior to the '099 Patent, in mixed topologies including non-mesh-connected and mesh-connected

endpoints, the non-mesh connected participants in a video conference did not enjoy the same benefits and could not participate in the same way as mesh-connected participants. *See, e.g., id.*, 15:37-41 (“non-mesh parties could participate in a mesh conference ***but without*** the personal control over video content and other benefits offered by the filmstrip invention in a mesh conference” (emphasis added)). In contrast to the shortcomings of the prior art, the Challenged Claims of the '099 Patent are directed to a technical solution that permits for videoconference participants at non-mesh-connected endpoints to enjoy the same features and benefits of video conference participants at mesh-connected endpoints. *Id.*, 15:42-49, 17:47-58; EX2009, ¶¶35-45.

Referring to FIG. 1 of the '099 Patent (reproduced and annotated below), an example endpoint 10 participating in a teleconference can include video cameras 15, monitors 12, and associated controllers/devices 11, 16, and 19 that permit for conference participants 14 to participate in a teleconference with other endpoints. EX1001, 5:4-35, FIG. 1. The conference participants 14 at the endpoint 10 (circled in red) can participate in a teleconference, for example, by viewing the “multiple video streams and collaboration data 17 [received] from all other endpoints participating in a given conference” on the monitors 12 and transmitting “video streams 13” generated by the cameras 15 to the other endpoints. *Id.* Other endpoint

configurations are also possible, such as each endpoint “having a single display screen intended to show video or collaboration material” from the other conference participants. *Id.*, 5:36-38; EX2009, ¶38.

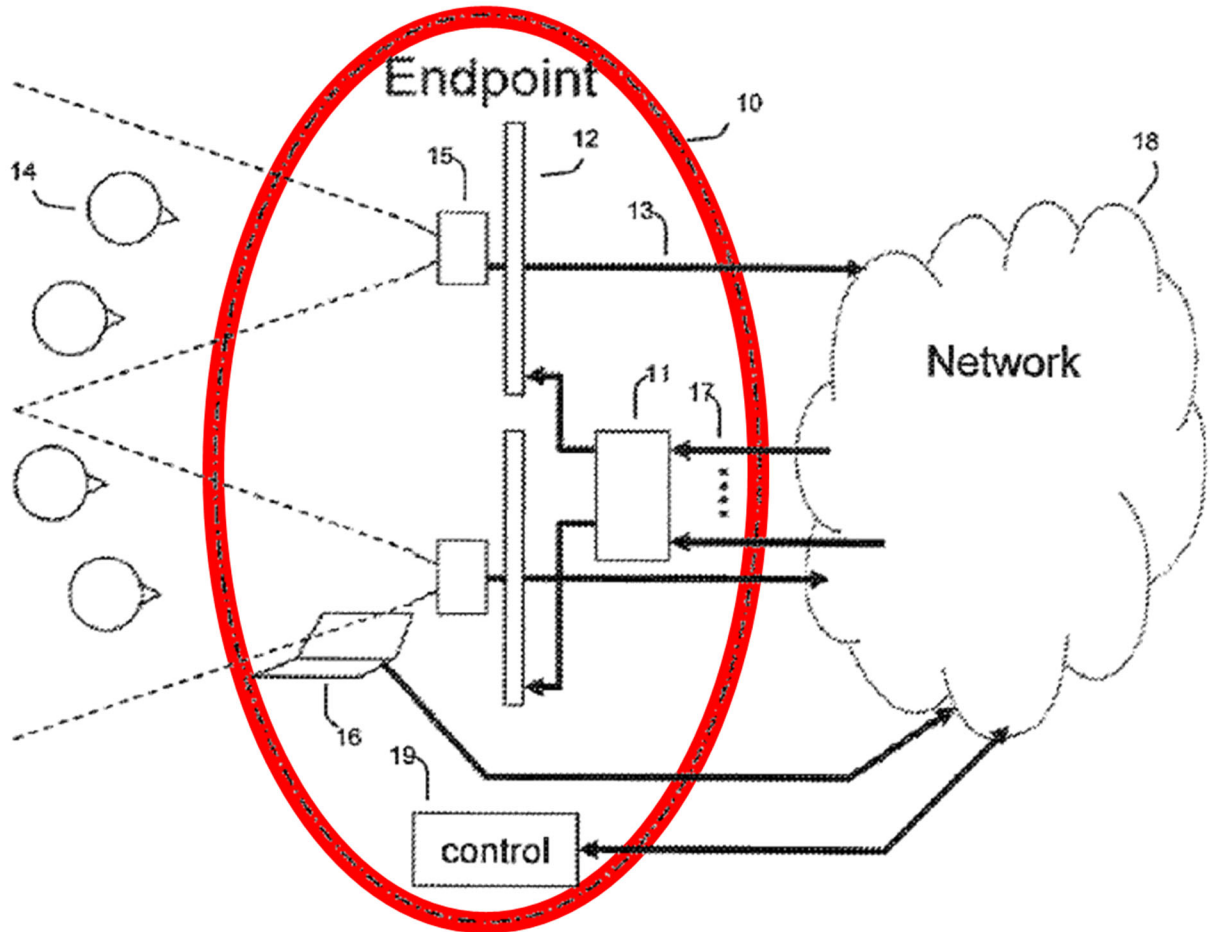


Fig 1

EX1001, FIG. 1.

The '099 Patent depicts an example of a mesh configuration of endpoints in a teleconference with regard to FIG. 2 (reproduced below). As described in the background section of the '099 Patent, in the exemplary prior art mesh configuration

depicted in FIG. 2, “each endpoint is connected directly to each other endpoint in the conference,” and “each other endpoint has complete freedom to present video and other collaboration material uniquely and independently of the way it is presented at other endpoints.” *Id.*, 2:36-40; EX2009, ¶39.

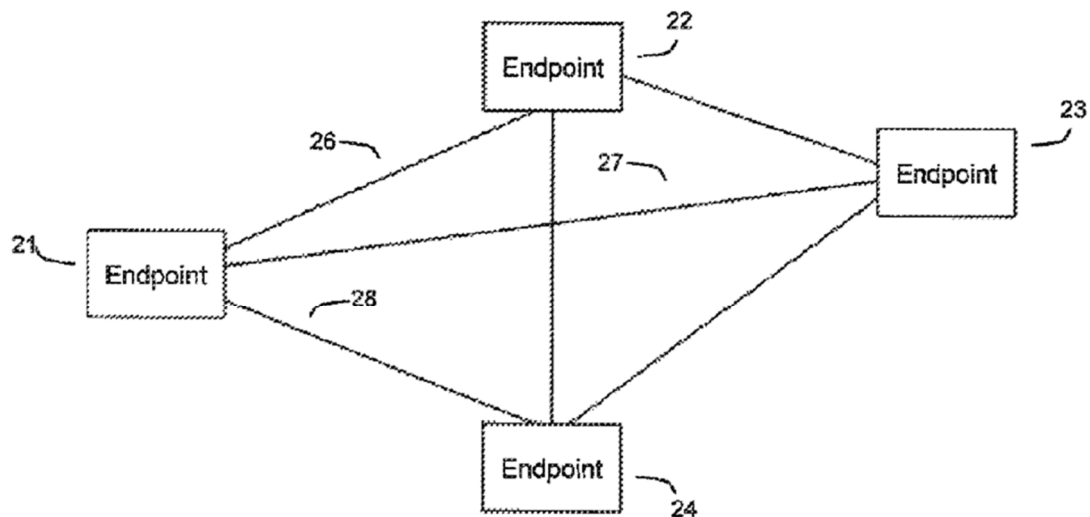


Fig 2

EX1001, FIG. 2.

The background section of the '099 Patent also describes that prior art non-mesh videoconferences “hosted by a Multiparty Control Unit (MCU)” and “interconnected in a star, or multi-star, topology,” involved the “MCU consolidat[ing] all the video feeds from the end points and present[ing] appropriate video images to each of the end points of all the video camera and collaboration material video feeds in the conference.” EX1001, 1:34-39, 2:33-34. The '099 Patent

describes that “MCUs typically *permit limited independent control* of what images are promoted to full-scale size,” including “permit[ing] ‘paging’ between individual images or [] enabl[ing] automatic promotion of single images or image-combinations using audio or manual cues.” *Id.*, 1:45-50 (emphasis added); EX2009, ¶40. The ’099 Patent depicts example prior art “MCU screen layouts” in FIGS. 3a-c, which show the “screen 31 is simply divided into equal sized panes 32” (FIG. 3a, reproduced below) and “[v]ideo A of the current talker at is rendered in the largest ‘pane’ 33, other participant Videos B, C and D are rendered in the smaller panes 34” (FIG. 3b, reproduced below). EX1001, 1:45-64, FIGS. 3a-c.

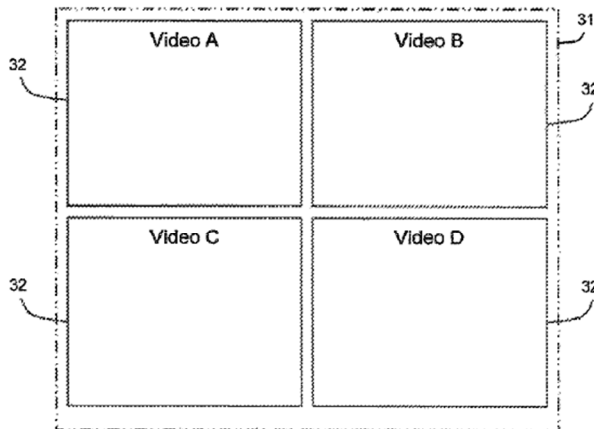


Fig 3a

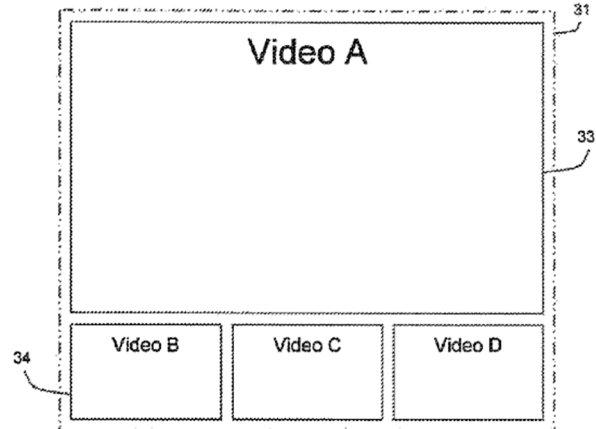


Fig 3b

Id., FIGS. 3a-b.

The ’099 Patent further describes that prior art teleconferencing systems using mixed topologies with mesh and non-mesh endpoints would carry over similar limitations restricting the independent control of video content by non-mesh

participants. For example, the '099 Patent describes that in prior art mixed topologies, the “non-mesh parties could participate in a mesh conference *but without the personal control over video content* and other benefits offered by the film strip invention in a mesh conference.” EX1001, 15:38-41 (emphasis added); EX2009, ¶40.

The Challenged Claims of the '099 Patent solve this problem in the prior art by describing and claiming a technical solution that “relates to control to mixed topology conferences” in which non-mesh participants are able “to exercise the same control over [] their video presentation as would a mesh connected user.” EX1001, 15:42-49; EX2009, ¶¶35, 41-42. Referring to FIG. 9 (reproduced and annotated below) as an illustrative example of the '099 Patent's solution, a mixed topology includes mesh-connected endpoints 81-83 (highlighted in red), a non-mesh endpoint 84 (“star endpoint 84,” highlighted in green), and a server 91 (“star server 91”) that facilitates full teleconference participation of the non-mesh endpoint 84 with the mesh-connected endpoints 81-83 through the use of control connections 95-97. EX1001, 16:6-35, FIG. 9; EX2009, ¶42.

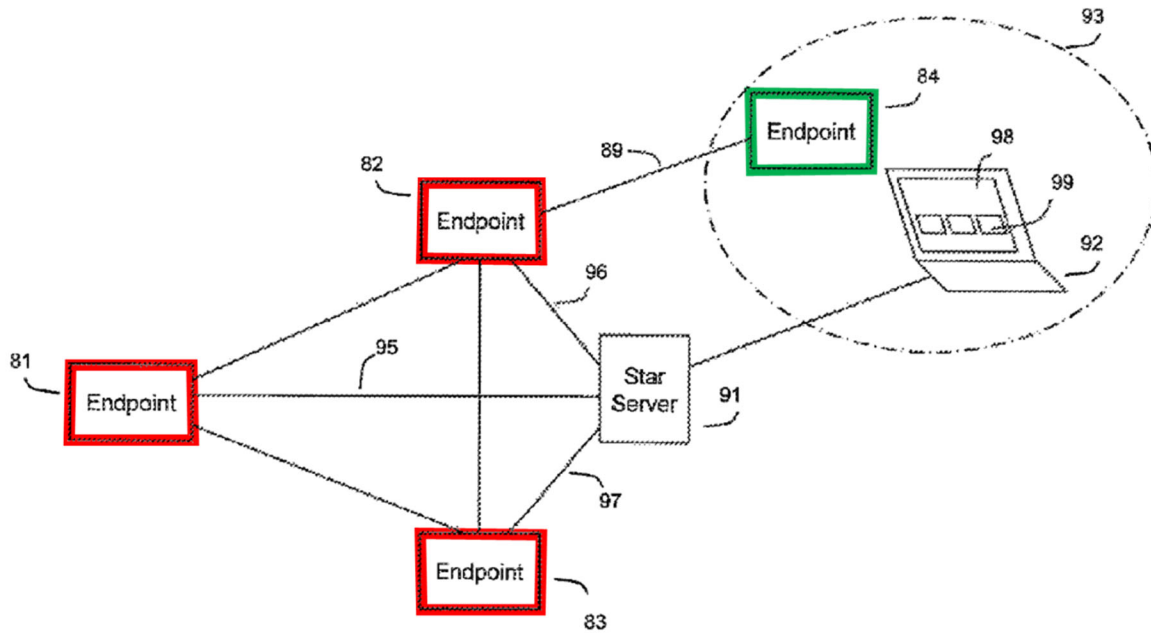


Fig 9

EX1001, FIG. 9.

Referring to FIG. 10 (reproduced and annotated below) as another illustrative example of the '099 Patent's solution, the mixed topology includes the mesh-connected endpoints 81-83, the non-mesh endpoint 84, and the server 91 depicted in FIG. 9, as well as a proxy 106 and control connections 108-109. The example proxy 106 includes a mixer function 102 that can receive, mix, and retransmit video feeds from the mesh-connected endpoints 81-83 to the non-mesh endpoint 84. EX1001, 16:36-67, FIG. 10. The proxy 106 also includes a repeater function 103 that can receive and retransmit the video feed from the non-mesh endpoint 84 to the mesh-connected endpoints 81-83. *Id.* The proxy 106 additionally includes a proxy control function 104 that interfaces with the server 91 to control operation of the mixer

function 102 and the repeater function 103 via the control connections 108 and 109 to provide appropriate video feeds from the mesh endpoints 81-83 to the non-mesh endpoint 84. *Id.* In describing embodiments according to FIG. 10, the '099 Patent clarifies that “[m]ost call set-up connections which function in a well-known way” are “omitted from FIG. 10 for clarity,” and FIG. 10 itself further specifies that “some mesh connections have been omitted for clarity.” *Id.*, 16:51-53, FIG. 10; EX2009, ¶¶43-44.

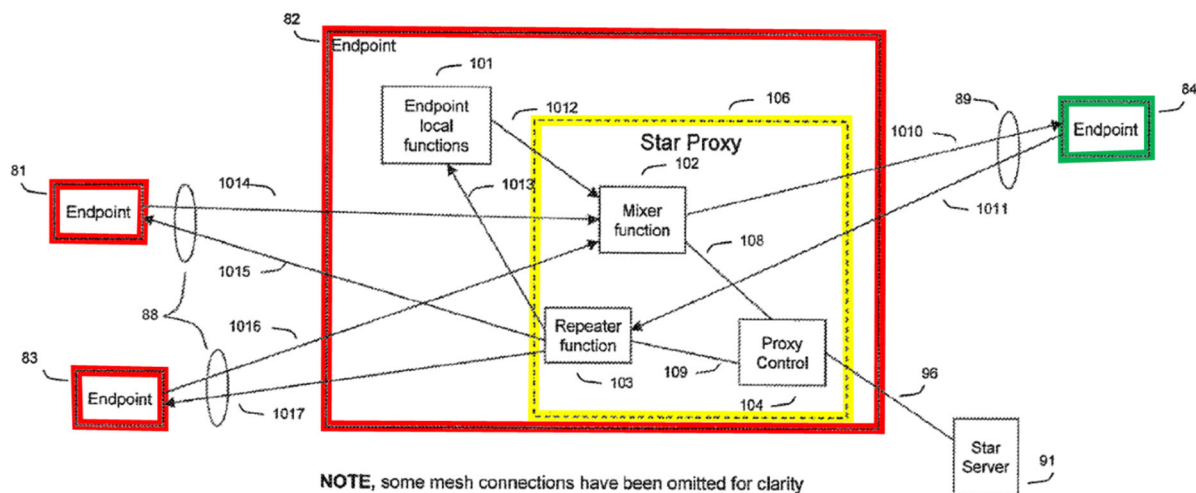


Fig 10

EX1001, FIG. 10.

The '099 Patent describes exemplary embodiments that allow a non-mesh endpoint, such as the endpoint 84, to fully participate in a teleconference with mesh endpoints, such as the endpoints 81-83, through a “filmstrip user interface” that permits the non-mesh endpoint user “to exercise the same control over the their video

presentation as would a mesh connected user.” *Id.*, 15:46-49. For instance, the ’099 Patent contemplates exemplary embodiments where a server in a mixed topology can receive video feeds from all mesh endpoints and transmit a filmstrip to a non-mesh endpoint. The ’099 Patent further explains that user interaction with the filmstrip, such as selecting particular video feeds to promote, can be received and used to select and subsequently transmit appropriate video streams to the non-mesh endpoint. *Id.*, 15:4-57, 17:47-64; EX2009, ¶¶35, 44-45.

The ’099 Patent also describes how in exemplary embodiments, “[t]he proxy allows the endpoint 84 to participate in the conference in much the same way as if it were part of the mesh topology.” EX1001, 17:47-49; EX2009, ¶45. In an illustrative example, the ’099 Patent describes that for bandwidth considerations it can be “undesirable to stream high definition video to the [non-mesh] endpoint 84 from each mesh-connected endpoint,” such that some embodiments only “stream the full size feed from the endpoint currently promoted to the main window” while streaming “reduced size feeds” for other endpoints in the teleconference to “create the film strip.” EX1001, 17:49-56. Through a user interface on the non-mesh endpoint and the control connections, proxy, and server discussed above, “[t]he user can then select a frame on the film strip for promotion, and the promoted feed is then

substituted for the current full sized frame feed.” *Id.*, 17:56-58; *see also id.*, 4:5-32, 17:59-64.

Furthermore, while the discussion above focuses on the benefits of the mixed topology of the '099 Patent with regard to non-mesh endpoints, mesh-connected endpoints similarly are able to receive and use video feeds from non-mesh endpoints as if they were mesh participants. *Id.*, 16:47-67, 17:47-66 (non-mesh endpoints can “participate in the conference in much the same way as if it were part of the mesh topology”), FIG. 10. For example, the '099 Patent describes that “*all end points*, star [i.e., non-mesh] or mesh, benefit from the ability to use the filmstrip described with reference to FIGS. 1 to 7” throughout the '099 Patent. *Id.*, 17:65-66; EX2009, ¶45.

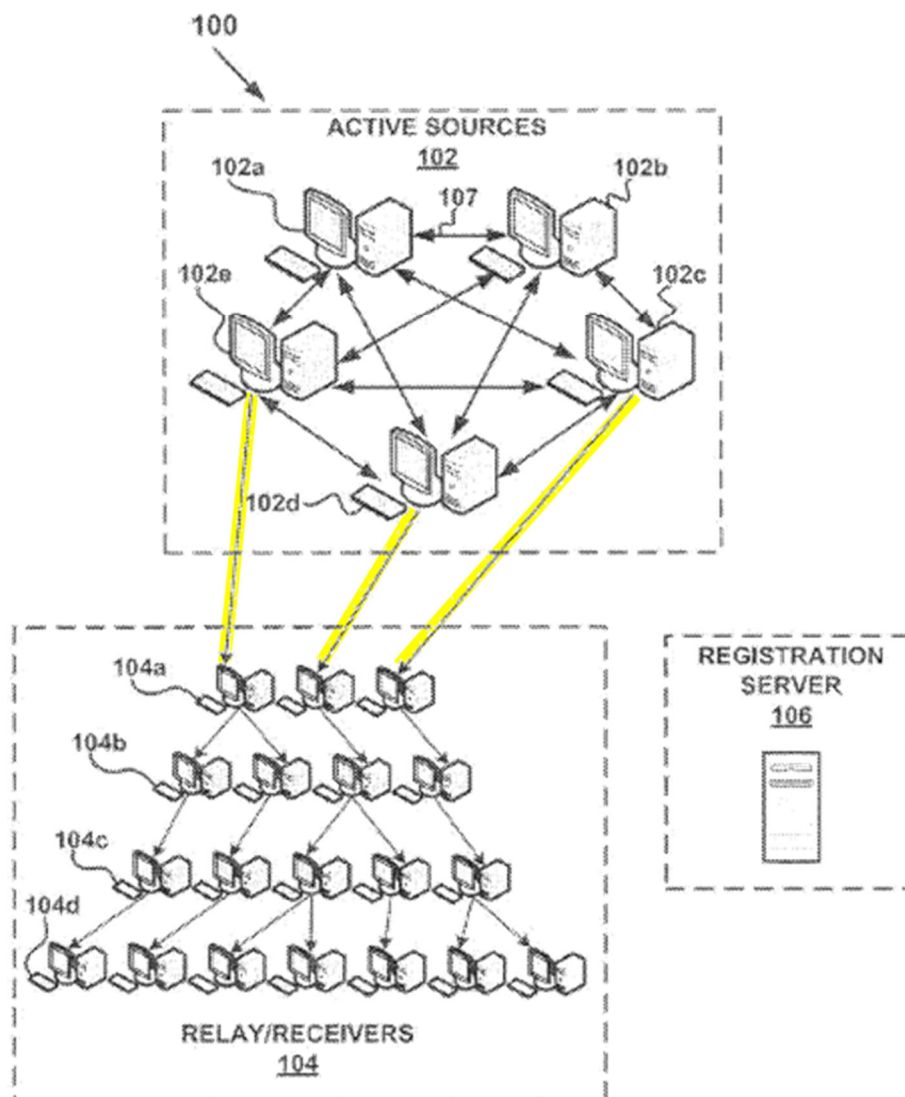
Additionally, the prosecution of the Challenged Claims was brief, with the Challenged Claims being initially identified as allowable by the Office without ever receiving a substantive rejection. EX1002.

III. OVERVIEW OF THE ASSERTED REFERENCES

A. SETTON (EX1005)

In contrast to the technical solution of the '099 Patent that permits for participants at non-mesh endpoints to participate in a videoconference in the same way with the same benefits as conference participants at mesh endpoints (*supra*, Sec.

II), Setton is directed to a system that uses peer-to-peer connections to stream a teleconference among a group of mesh-connected endpoints (“active sources”) to a broader audience of observing non-mesh endpoints (“relay/receivers”). EX1005, [0003], [0014]-[0018]; *see also* EX2010, 62:1-11, 62:18-63:1, 63:5-9. It is undisputed based on Setton itself—as admitted by Petitioner’s expert—that its users at the relay/receivers (the purported non-mesh endpoints) do not enjoy the same benefits or features as the active sources (the purported mesh endpoints). *See, e.g.,* EX2010, 106:7-107:6, 109:10-21, 111:10-20, 112:8-18, 114:23-115:6. Referring to Setton’s FIG. 1 (reproduced below), Setton’s peer-to-peer network 100 is divided into active sources 102 that “generate content (e.g., a video stream, an audio stream, etc.),” and relay/receivers 104 that “do **not** generate content” and instead receive the content generated by the active sources 102. *See* EX1005, [0014], [0016], [0018]-[0019] (emphasis added); *see also* EX2010, 101:24-103:7. As indicated by the bi-directional arrows between the active sources 102 and the unidirectional arrows from the active sources 102 to the relay/receivers 104 (highlighted in yellow), the relay/receivers 104 are passive observers of the teleconference among the active sources 102. EX1005, [0016]-[0019], [0028]; EX2009, ¶¶46-47; *see also* EX2010, 63:10-64:4.

**FIG. 1**

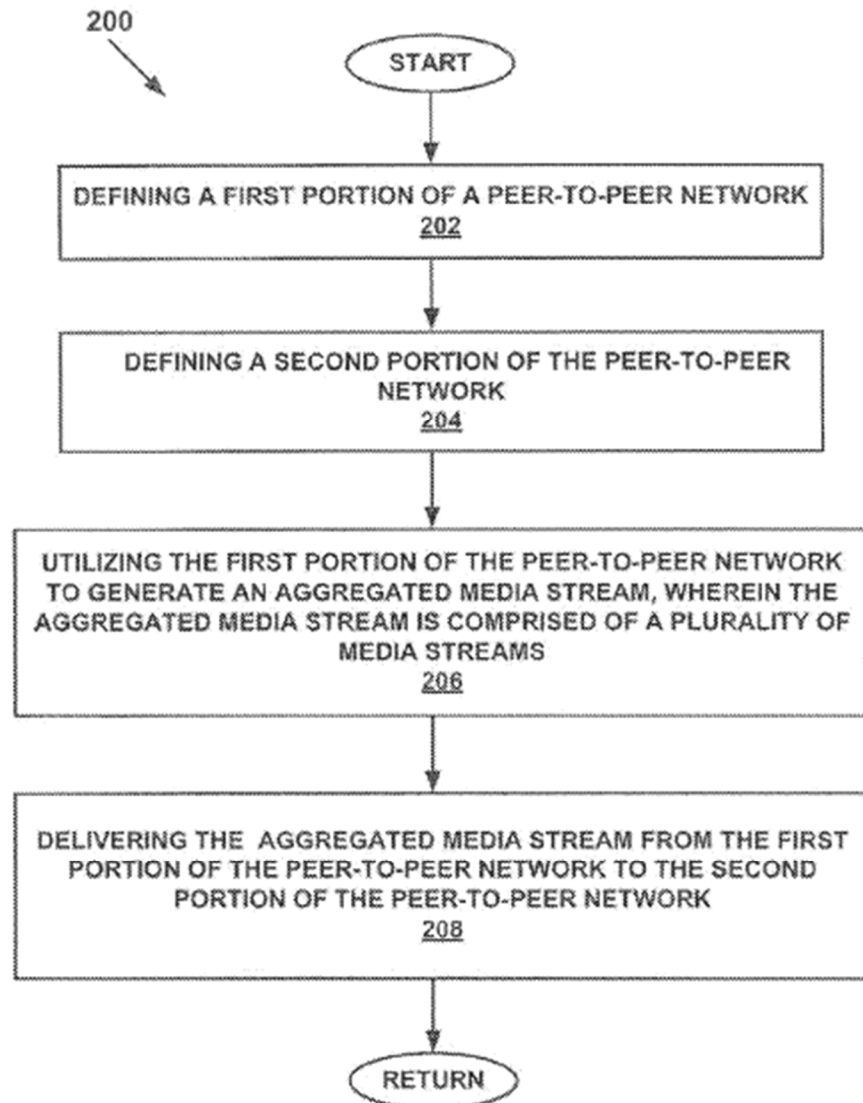
EX1005, FIG. 1 (annotations added).

For example, Setton describes that “the bi-directional arrows, typically shown as 107, denote packet exchanges between the active sources,” that the active sources

102 “generate an aggregated media stream . . . using a mesh based data aggregation peer-to-peer protocol,” and that “the aggregated media stream [from the active sources 102] is transmitted to the relay/receivers 104 . . . via a tree-based peer-to-peer *video multicast protocol*.” *Id.*, [0019], [0023] (emphasis added); EX2009, ¶48. Setton provides an illustrative teleconference example of its technology by describing the active sources as “the *teleconference speakers*” and the relay/receivers as “[l]isteners of the teleconference.” EX1005, [0028] (emphasis added); *see also id.*, [0030]; EX2009, ¶52.

Setton further describes its network configuration 100 as designed to minimize network delay between active sources (“teleconference speakers”) so that they “do not suffer from unacceptable delay issues” because they “are conversing[] and the delay between them needs to be kept extremely low.” EX1005, [0028]. Setton teaches that its relay/receivers (“listeners of the teleconference”) “can tolerate a higher delay, on the order of a few seconds, as long as the media streams originating from the different speakers remain synchronized.” *Id.* Setton explains that by treating active sources and relay/receivers differently in terms of acceptable network delays, its multicasting solution can employ “conventional peer-to-peer video streaming distribution mechanisms” that were not possible when “all peers [are treated] equally.” *Id.*; EX2009, ¶¶50-51, 55.

Additionally, Setton states that “*the* aggregated media stream” (singular) is generated and transmitted by the active sources to the relay/receivers. EX1005, [0014] (“*[t]he aggregated stream* is transmitted to all the relay/receiver peers via application layer multicast tree(s)” (emphasis added)), [0022]-[0023]. But there is no disclosure or suggestion in Setton of the active sources receiving requests for, generating, or transmitting individualized aggregated media streams to any of the relay/receivers. *Id.*, [0018]-[0019], [0022]-[0023]. For example, FIG. 2 (reproduced below) illustrates Setton’s “process [200] for peer-to-peer media streaming,” which involves defining the active sources (“first portion”) and the relay/receivers (“second portion”) (202-204), the active sources generating an aggregated media stream (206), and then delivering the aggregated media stream to the relay/receivers (208). *Id.*, [0015]-[0016], [0022]-[0023], FIG. 2. The process 200 is not depicted or described as involving any input, control, or requests from the relay/receivers (“second portion”) related to the content being transmitted in the aggregated media stream, let alone any of the relay/receivers transmitting media streams to the active sources. EX2009, ¶¶49, 56.

**FIG. 2**

EX1005, FIG. 2.

While Setton does describe using different protocols to generate and transmit different versions of the aggregated media stream, this discussion is limited to

differentiating between prioritized media streams transmitted among the active sources and a lower priority media stream broadcast to the relay/receivers. *Id.*, [0014], [0019], [0028]-[0030] (“the multi-tier distribution enables different quality of service requirement for *different sets of peers*” (emphasis added)). Setton illustrates that several versions of an aggregated “super-stream” are generated by “members of *active sources 102*” and “transmitted as a unique stream to *the rest of the active sources.*” *Id.*, [0019] (emphasis added); EX2009, ¶57.

Setton is silent, however, regarding the *content* of the aggregated media stream being transmitted to the relay/receivers. At most, Setton describes that “the aggregated media stream is comprised of a plurality of media streams.” EX1005, Abstract, [0019]. Additionally, Setton is silent as to *how* the aggregated media stream is presented on the relay/receivers. As noted above, Setton’s focus is on a network configuration that permits for peer-to-peer multicasting of the aggregated media stream from a group of active sources to a group of passive relay/receivers who do not generate content, and Setton does not detail how the stream is presented on the relay/receivers. *Id.*, [0014], [0018], [0028]; EX2009, ¶58.

Setton further describes that a registration server 106 manages the network configuration 100 as well as the designation of peers as either active sources 102 or relay/receivers 104. EX1005, [0014], [0026], FIG. 1. Setton’s registration server

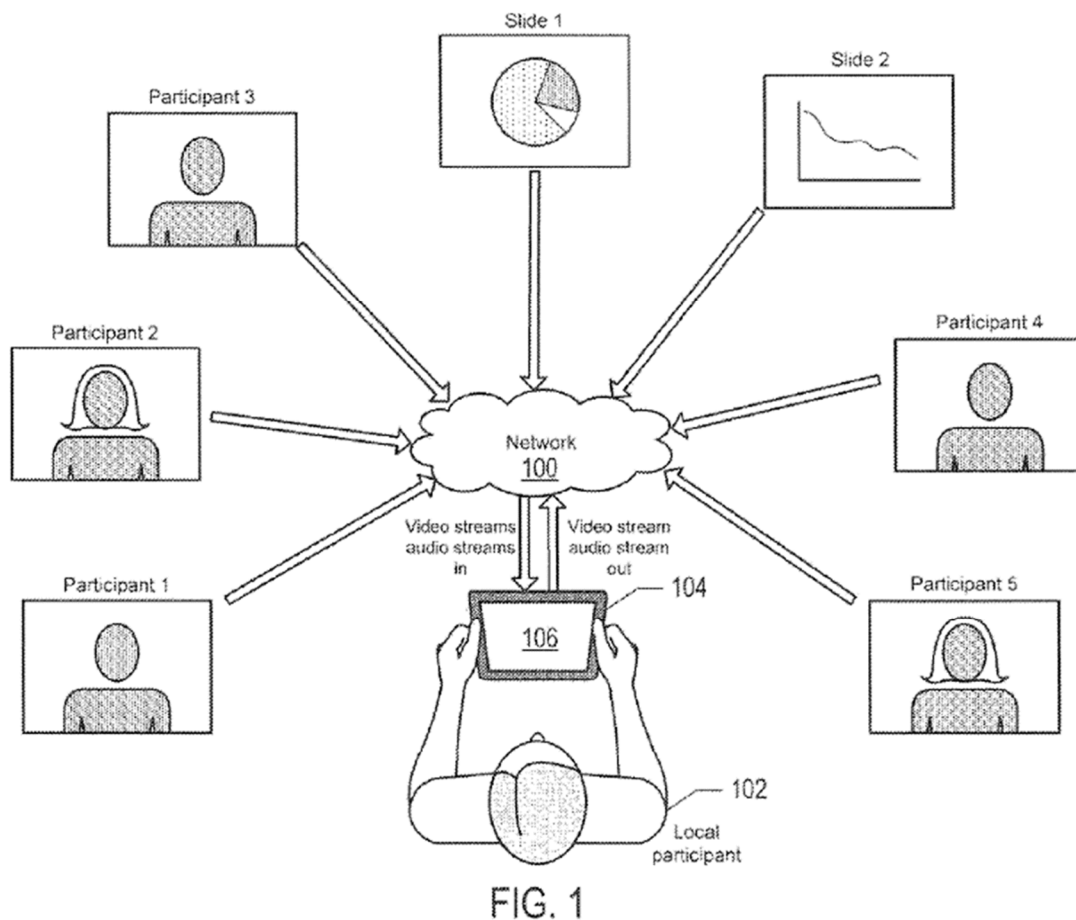
106 permits peers to transition between being active sources 102 and relay/receivers 104 based on whether the peers want to participate in or passively observe the teleconference. *Id.*, [0026]; *see also* EX2010, 111:10-20, 112:8-13. For instance, in one example Setton describes that a peer acting as a “speaker” who stops participating in the videoconference could transition from being an active source to a relay/receiver. EX1005, [0026]. In another example, Setton illustrates that a peer acting as “a member of the audience” and seeking to “join[] the discussion” would need to transition from being a relay/receiver to being an active source. *Id.*; EX2009, ¶¶53-54, 59.

B. BAKER (EX1006)

In contrast to the technical solution in videoconferencing provided by the Challenged Claims of the '099 Patent, the Baker reference is focused on presenting and navigating between streams from multiple participants on portable electronic devices (“PEDs”). *See* EX1006, Abstract.

Referring to FIG. 1 (reproduced below), Baker's primary embodiment, which is carried forward from FIG. 1 through FIGS. 10A-B, involves a PED 104 associated with a participant 102 that directly receives streams (e.g., video and audio streams) for each of the conference participants over network 100 and then locally determines how to present the streams on display 106. *Id.*, 2:31-49, 3:6-8, 4:2-4, 4:25-30, 4:48-

57, FIGS. 1-4. For example, Baker explains that that the “video and audio *streams* generated by *each of the remote participants* are sent to the network 100 and *received by the PED 104.*” *Id.*, 2:43-46 (emphasis added). Baker further describes “the *video stream of each participant is received by the PED 104* and arranged in a data structure” that “enables each video stream to be presented in real time within the boundaries of the associated viewing area . . . of the display 106.” *Id.*, 4:48-55 (emphasis added); EX2009, ¶¶60-63.



EX1006, FIG. 1.

In another example, as illustrated in FIG. 3 (reproduced below), Baker describes a client-server network 300 in which a “centralized computing device 302” receives and processes “the video and audio streams *from each of the participants*,” and then “sends the video and audio streams generated by the remote participants 1-5 to the local participant 102.” *Id.*, 3:55-4:8 (emphasis added). Baker further describes that “[t]he *client-side application run by each remote participant* displays the video streams, or a subset of the video streams, . . . and may allow the participant to arrange the viewing areas of the other participants as desired.” *Id.*, 4:5-13 (emphasis added); EX2009, ¶¶64-65.

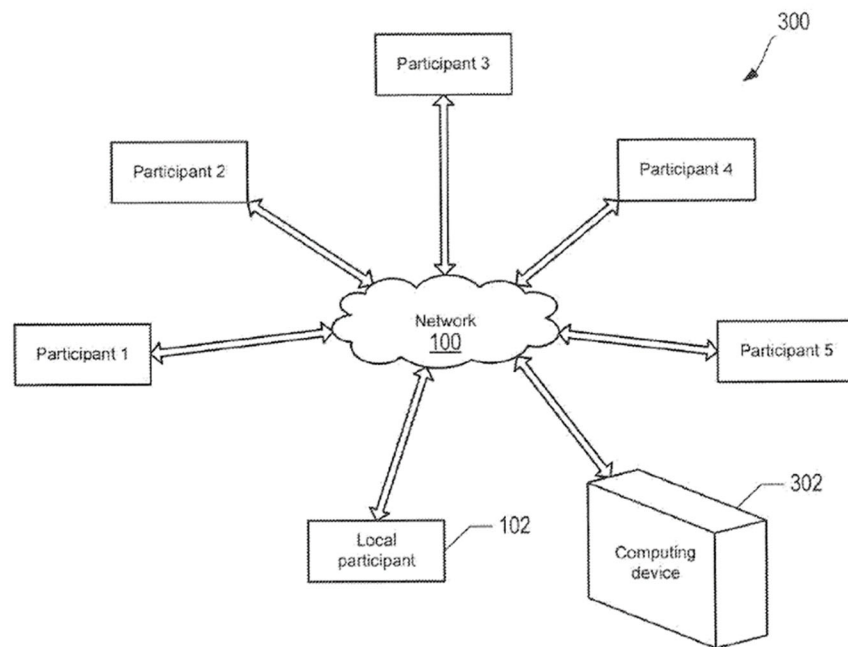


FIG. 3

EX1006, FIG. 3.

In a further example, as illustrated in FIG. 4 (reproduced below), Baker describes a “peer-to-peer network” in which “[a]ny shared content provided by a participant is sent to or accessed by the other participants.” *Id.*, 4:19-47. For instance, in Baker’s peer-to-peer network, the “local participant 102 has access to *each* of the remote participants computing devices to *download the video and audio streams* generated by the remote participants.” *Id.*, 4:30-34 (emphasis added); EX2009, ¶¶66-67.

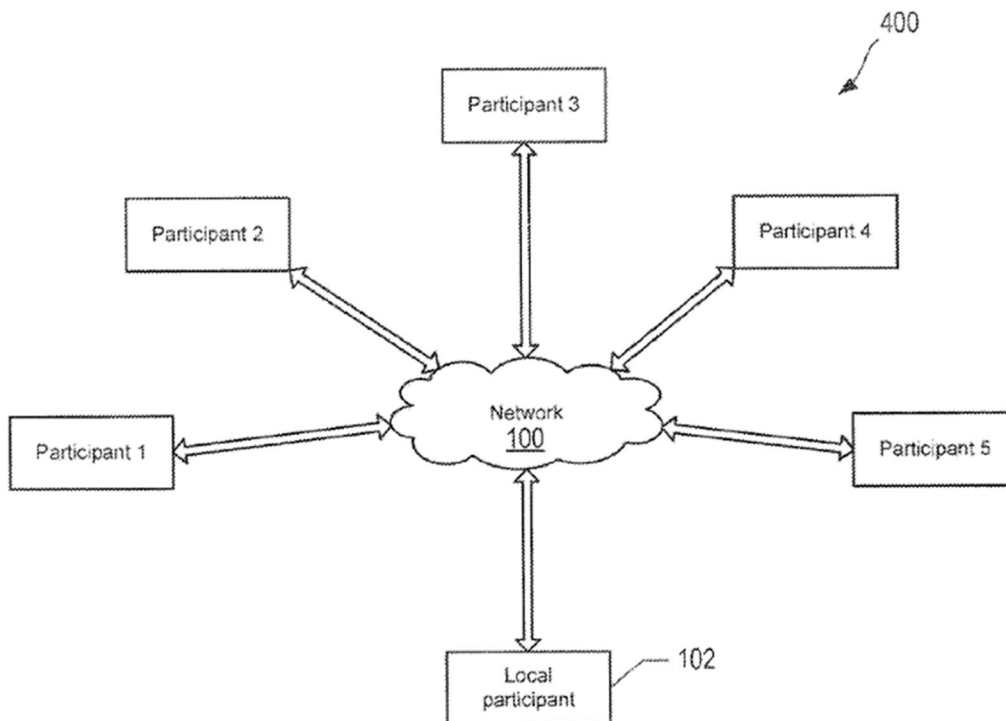


FIG. 4

EX1006, FIG. 4.

Following Baker's disclosure from FIGS. 1-4 regarding the PED 104 receiving the streams for each participant in the conference and then locally determining how to present those streams on the display 106, Baker further describes different ways and arrangements for presenting the streams on the display 106 with regard to FIG. 5 through FIGS. 10A-B. For the example presented in FIGS. 10A-B (reproduced below), Baker presents a "strip 1002 of reduced size images . . . along a top of the display 106" for the PED 104 such that the participant 102 can, for example, "touch or tap on the highlighted image 1006 of participant 5 to bring up participant 5's viewing area in the display 106." *Id.*, 8:55-62; EX2009, ¶68.

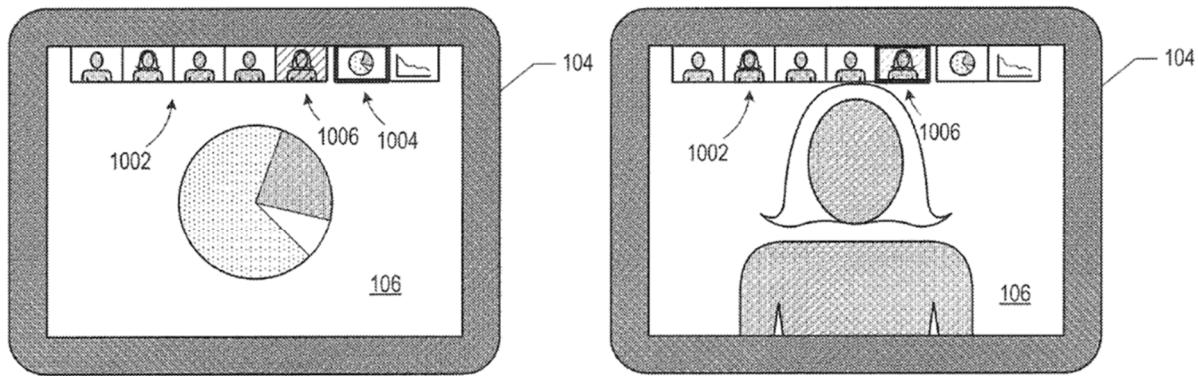


FIG. 10A

FIG. 10B

EX1006, FIGS. 10A-B.

As described above with regard to FIGS. 10A-B, the PED 104 receives, locally stores, and processes the streams from the other participants to present the strip 1002 and the image in the viewing area in the display 106. Although Baker's

description regarding FIGS. 10A-B is limited to the user interface features on the display 106, given the disclosure in Baker, a person of ordinary skill in the art (“POSITA”) would have understood from Baker’s description that a local participant can “bring up” another participant’s video stream in the viewing area in the display 106 involves the PED 104 *locally* toggling between which of the participant streams are presented in the viewing area and in the strip 1002 using the participant streams already received and available on the PED 104. EX2009, ¶69.

Baker’s FIG. 11 (reproduced below) presents a different embodiment in which less than the complete set of video streams from the other participants are sent to, received, processed, and/or displayed by the PED 104. EX1006, 8:63-9:26, FIG. 11. However, the specific mechanisms and network topology used to provide the features described for Baker’s FIG. 11 embodiment are unclear. For example, as shown in FIG. 11, Baker describes that the participant 102 can choose “to have only the video streams of visible remote participants to be sent to the PED 104,” but it is unclear as to *how* that local participant election translates into “only the video stream of the participant (i.e. participant 3) [being] received, processed, and presented on the display 106.” *Id.* Baker is silent regarding the network components and control processing required for the FIG. 11 embodiment—instead describing high-level

prospective features without detailing the underlying components needed to achieve them. EX2009, ¶70.

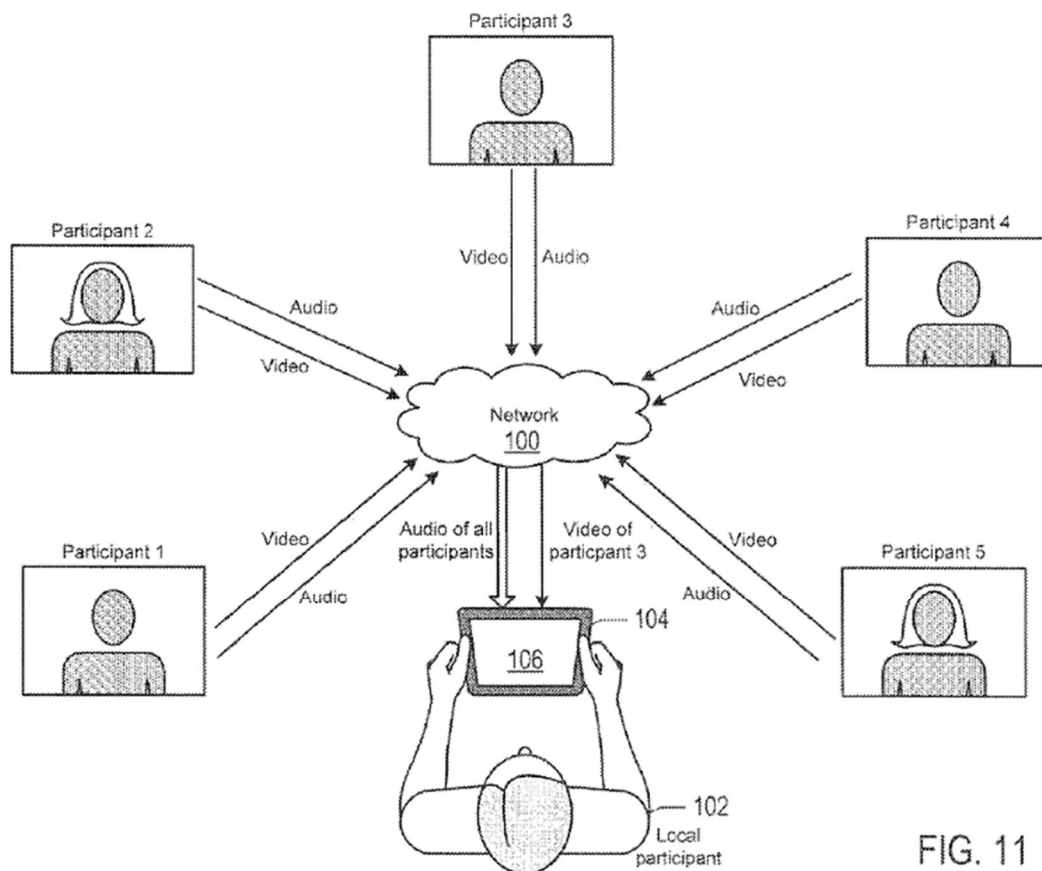


FIG. 11

Id., FIG. 11.

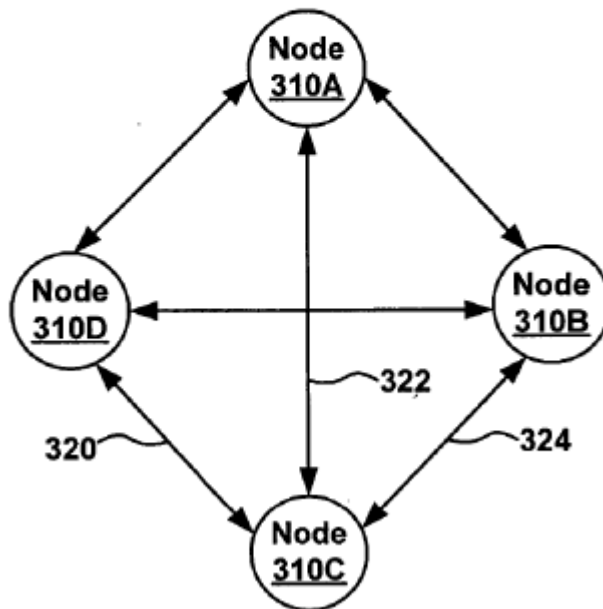
C. APOSTOLOPOULOS (EX1007)

Apostolopoulos is generally directed to systems and methods that provide an adaptive topology in a communication environment. EX1007, Abstract, Title. The primary and, in fact, only communication environment that Apostolopoulos describes in any detail for a communication environment is a virtual environment,

such as a “multi-player game,” and dynamically adapting network topology to adapt to the number of participants in that virtual environment. EX1007, [0002] (the “Technical Field” section, explaining that “[t]he present invention relates to the field of communication networks, and more particularly to a method and system for topology adaptation to support communication *in a virtual environment*” (emphasis added)), [0018], [0022], [0081]. Instead of transmitting and presenting video feeds of conference participants . . . on endpoints, as in the '099 Patent, Apostolopoulos's primary and only meaningfully described embodiments provide a communication platform for users to participate in a “view dependent three dimensional virtual environment” that involves “rendering a three dimensional model of the sending collaborator” based on “images [captured] in real-time of a sending collaborator” that are viewed from “the viewpoints of [a] receiving collaborator.” *Id.*, [0026]-[0028], [0055]. Thus, Apostolopoulos's primary and only meaningfully described embodiments refer to a *three dimensional virtual environment* in which collaborators interact with three dimensional models of each other within that three dimensional environment. *Id.*, [0031]-[0032]; EX2009, ¶¶71-72. Indeed, Petitioner's expert agreed that Apostolopoulos relates to communication in a three dimensional video game or virtual reality environment. EX2010, 118, 2:20.

[0053]-[0054]; EX2009, ¶71.

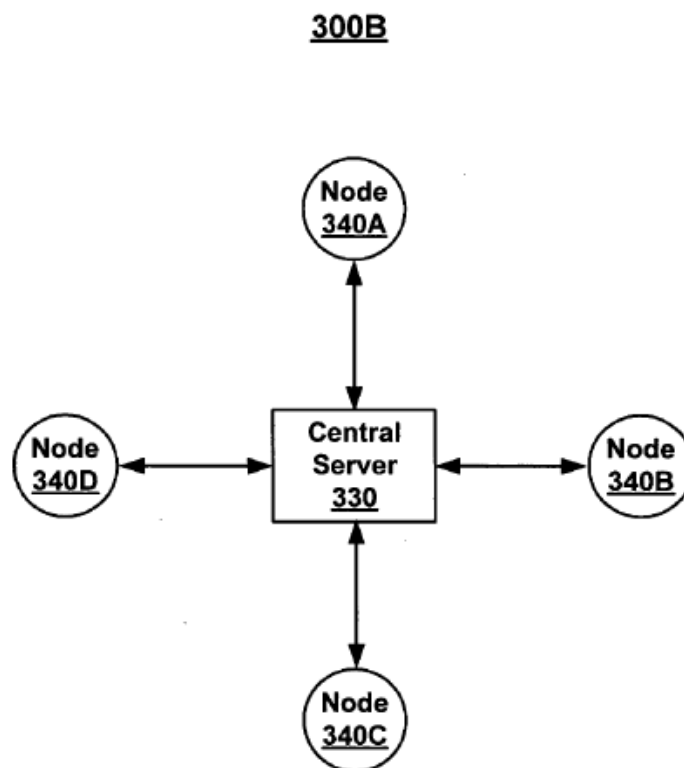
300A



EX1007, FIG. 3A.

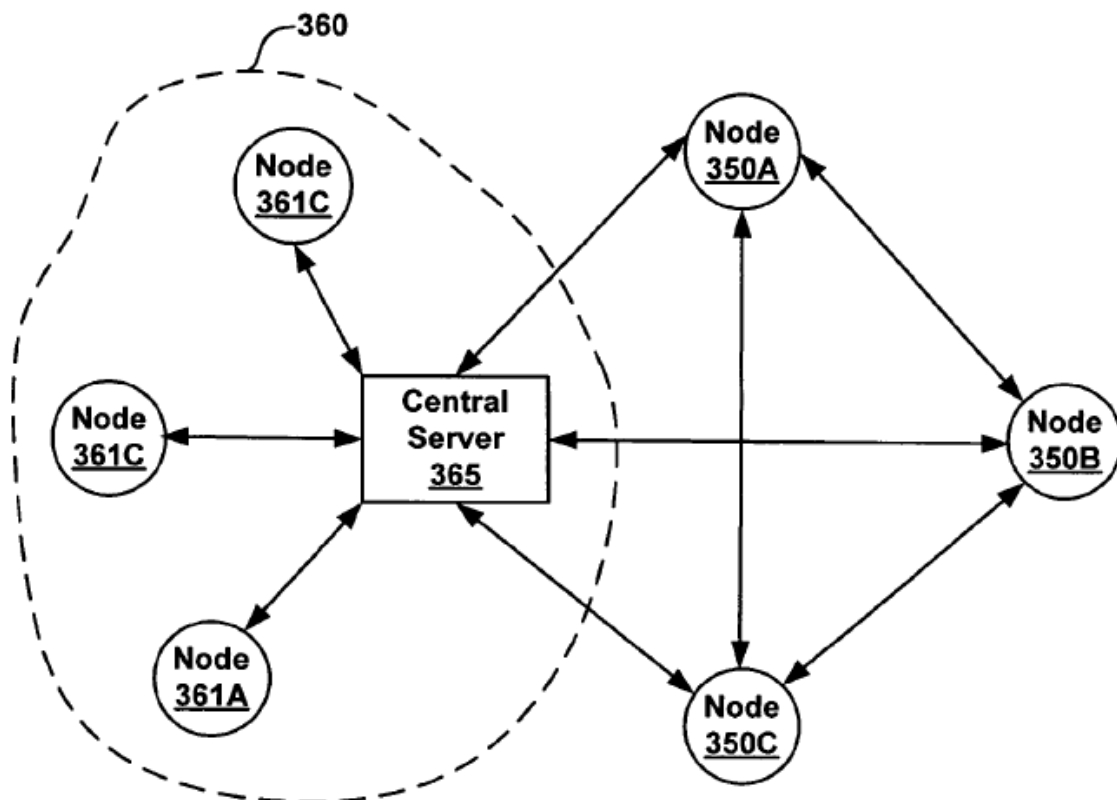
below, for a larger number of participants. In this embodiment, the three

dimensional model generation and rendering techniques using images from nodes (e.g., participants) are offloaded to a central server. *See* EX1007, [0057]-[0059]. For example, Apostolopoulos uses, for its primary and only described embodiments, a “central server” to provide processing capabilities for collaborator nodes to generate such three dimensional renderings in the virtual environment and deploy those renderings across the collaborator nodes. *Id.*, [0023], [0067], [0088]. The central server can “generate view dependent video streams” for the virtual environment based on a viewpoint of each receiving node in that virtual environment. *Id.*, [0026]-[0028], [0031], [0059]-[0064], [0067]; EX2009, ¶¶71-73.



EX1007, FIG. 3B.

Apostolopoulos additionally describes hybrid network topologies in which some nodes are connected in a mesh configuration and other nodes are connected in a star (i.e., non-mesh) configuration to a central server, as illustrated in FIG. 3C (reproduced below). *Id.*, [0069], [0070]. Apostolopoulos further describes that its system can dynamically transition to such hybrid topologies when the number of collaborators increases above the level where pure mesh or pure star topologies are appropriate. *Id.*, [0073]-[0076]; EX2009, ¶¶73-74.

300C

EX1007, FIG. 3C.

With regard to processing, Apostolopoulos contemplates for its primary and only meaningfully described embodiments, exemplary embodiments in which the central server can receive a video stream from one of the nodes, process that video stream to generate a rendering of the virtual environment, and then pass the rendering to other nodes in the environment. EX1007, [0056], [0058]-[0059]. This processing includes view synthesis techniques to construct a new view of the sending collaborator from the view point of the receiving collaborator, and can include “rendering a three dimensional model of the sending collaborator.” *Id.*, [0027]-[0028], [0061]; EX2009, ¶74.

IV. PERSON OF ORDINARY SKILL IN THE ART

While the Institution Decision declined to adopt Patent Owner's definition of a person of ordinary skill in the art (“POSITA”) at the time of the claimed invention of the '099 patent, Patent Owner maintains that a POSITA would have had a degree in computer science, electrical engineering, or a similar field with at least 2-3 years of experience with data networks and video streaming systems or other comparable professional experience. Additional education could substitute for professional experience, or vice versa. EX2009, ¶33.

Although Patent Owner does not agree with the Petition's and the Reddy Declaration's definition of a POSITA, the deficiencies in the Petition are not

dependent on whether the Board adopts Patent Owner's or Petitioner's definition.

See EX2009, ¶34.

V. CLAIM CONSTRUCTION

The Petition did not propose any claim constructions and thus Patent Owner did not have constructions to respond to. Without a full record, the Board proceeded to construe of the limitations in the '099 Patent, specifically the meaning of “the conference participants” and Elements [3.4] and [10.3]. *See* Paper 7, 16-17, 33-34. Patent Owner respectfully submits that the Board's constructions of these terms are contrary to the claim language and the disclosures and objectives of the specification. As to “the conference participants,” Patent Owner further notes that the Board's construction is contrary to how Petitioner itself has construed that term in co-pending litigation. Indeed, having declined to present any claim constructions in its Petition (relying instead on plain and ordinary meaning), Petitioner has presented claim constructions for limitations in the co-pending litigation that Patent Owner submits undercut Petitioner's arguments, its expert's opinions, and the preliminary claim constructions reached by the Board in its Institution Decision.

A. “[THE] CONFERENCE PARTICIPANTS”

The term “the conference participants” appears in challenged independent claims 3 and 10, and should be construed to mean “videoconference participants at

the at least some mesh-connected endpoints and the at least one non-mesh connected endpoint” consistent with its ordinary and customary meaning as well as Patent Owner’s proposed construction in co-pending district court litigation with Petitioner—*Video Solutions PTE. Ltd. v. Cisco Systems, Inc.*, Civil Action No. 2:23-cv-00222 pending in the United States District Court for the Eastern District of Texas (the “District Court Litigation”). *See* EX2111, Ex. A at 17; EX2009, ¶77. Although the Board preliminary concluded that use of “the mesh-connected conference participants” in Element [3.3] “derives antecedent basis from (and is the same as) the ‘conference participants’ referenced earlier in the claim” (Paper 7 at 17), the claim language itself, the specification, and even Petitioner’s own proposed construction in the District Court Litigation all support that “the conference participants” is not limited to only mesh-connected conference participants. Thus, for the reasons below, the Board should adopt Patent Owner’s proposed construction. EX2009, ¶¶77-86.

As an initial matter, the claim language itself informs the construction of “the conference participants.” *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) (“the claims themselves provide substantial guidance as to the meaning of particular claim terms”). In relevant part, claim 3 recites:

[3.1.1] a plurality of endpoints, at least some of which are connected in a mesh configuration and at least one of which is connected in a non-

mesh configuration to a selected one of the mesh-connected endpoints, and [3.1.2] which are configured such that a film strip with frames containing reduced-size video feeds from *the conference participants* is displayed at the mesh endpoints ...

EX1001, Cl. 3 (emphasis added). From the structure of Elements [3.1.1]-[3.1.2], a POSITA would have understood that “the conference participants” relates to individuals participating in the videoconference from the “plurality of endpoints, at least some of which are connected in a mesh configuration and at least one of which is connected in a non-mesh configuration.” EX2009, ¶¶78-79. Indeed, the Board has already found that “element 3.1.2 further limits the claimed ‘plurality of endpoints’” in Element [3.1.1]. Paper 7, 26 n.13. Accordingly, because the plurality of endpoints includes both mesh-connected endpoints and at least one non-mesh connected endpoint, a POSITA would have understood that “the conference participants” would encompass participants at both the mesh-connected endpoints and the at least one non-mesh connected endpoint. EX2009, ¶79.

Elements [3.2]-[3.3] also support this claim scope. *See* EX2009, ¶80. Both of these elements pertain to providing video streams from mesh-connected endpoints to the at least one non-mesh connected endpoint. Element [3.2] recites “a proxy at the selected mesh-connected endpoint for the non-mesh connected endpoint ... to receive video feeds from the mesh-connected endpoints for the non-mesh connected endpoint,” and Element [3.3] then recites “a server associated with the proxy for

serving ... video feeds from the mesh-connected conference participants to the non-mesh connected endpoint.” EX1001, 18:33-41. Because there is no reason to provide the non-mesh connected endpoint with the video stream of its own associated conference participant, Element [3.3] only refers to serving “video feeds from the mesh-connected conference participants to the non-mesh connected endpoint.” *Id.* Accordingly, a POSITA would have understood that use of “the mesh-connected endpoints” in Element [3.3] is not a reference to all conference participants, but just a subset of them, and that “the conference participants” is broader and encompasses participants at both mesh and non-mesh connected endpoints. EX2009, ¶¶80-81.

This construction is also consistent with the claim construction principle that “[i]t is highly disfavored to construe terms in a way that renders them void, meaningless, or superfluous.” *Wasica Finance GmbH v. Continental Automotive Systems, Inc.*, 853 F.3d 1272, 1288 n.10 (Fed. Cir. 2017); *see also St. Jude Medical, LLC v. Snyders Heart Valve LLC*, 977 F.3d 1232, 1241 (Fed. Cir. 2020) (same). Consistent with this principle, “[i]n the absence of modifiers, general descriptive terms are typically construed as having their full meaning.” *Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1118 (Fed. Cir. 2004); *see also Promptu Sys. Corp. v. Comcast Corp.*, 92 F.4th 1372, 1382 (Fed. Cir. 2024)

(holding that “the claimed ‘wireline node’ must be broader in some way than the ‘*centralized* wireline node’” because “[t]he ‘centralized node’ modifier ... must add some meaning or limitation on the ‘wireline node’ being modified” (emphasis added)); *Johnson Worldwide Associates, Inc. v. Zebco Corp.*, 175 F.3d 985, 989 (Fed. Cir. 1999) (“General descriptive terms will ordinarily be given their full meaning; modifiers will not be added to broad terms standing alone.”). Indeed, *Innova/Pure Water* is instructive. There, the Federal Circuit held that the general term “operatively connected” was broad and not limited to a specific type of connection. *Id.* The court also rejected Safari’s proposed construction because it “largely reads the term ‘operatively’ out of the phrase ‘operatively connected.’” *Id.* at 1119. Similarly, construing “the mesh-connected conference participants” to have the same meaning as the general term “the conference participants” would improperly read the modifier “mesh-connected” out of “the mesh-connected conference participants.”¹

¹ In addition, although the Board noted that Element [3.4] “does not require that each of the *endpoints* supply a video feed; rather it requires that the *conference participants* supply the video feeds” (Paper 7, 16 (emphasis in original), the “purpose” of the ’099 Patent’s invention “is to allow users to see video ... from all

The specification also supports Patent Owner's proposed construction. The '099 Patent explains that:

The use of a filmstrip is a feature of the user interface of a video conferencing endpoint in accordance with embodiments of the invention. The filmstrip consists of a frame strip containing reduced size video feeds from the various participants. ***Its purpose is to allow users to see video and collaboration material from all conferenced parties*** and to determine which particular video streams or collaboration materials will be "promoted", that is to say displayed at a

conferenced parties" and conference participants provide video through endpoints. EX2009, ¶86. Thus, a POSITA would understand that the participant at the non-mesh connected endpoint is encompassed by "the conference participants." *Id.* Furthermore, for the reasons set forth above, a POSITA would have understood "the conference participants" to provide antecedent basis for the mesh-connected subset of those participants—"the mesh-connected conference participants"—and would have been able to determine the meaning of "the mesh-connected conference participants" without an explicit prior reference to only "mesh-connected conference participants." *See* EX2009, ¶¶79-81; *see also* *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014); *In re Downing*, 754 Fed. App'x 988, 996 (Fed. Cir. 2018).

larger scale, and how promotions will be initially placed on the screen(s) of the endpoint.

EX1001, 4:61-5:3 (emphasis added). From this disclosure, a POSITA would have understood that “all conferenced parties” are “the conference participants” and this is not limited to only mesh-connected conference participants. EX2009, ¶82. Indeed, restricting “the conference participants” to only mesh-connected conference participants is contrary to the stated purposes of the invention of the '099 Patent. The '099 Patent states in the Summary of the Invention that “in mixed topology networks where a number of endpoints are connected in a mesh connection, and at least one endpoint is connected to a mesh-connected endpoint with a non-mesh connection...*it would be desirable to permit the non-mesh connected endpoint to enjoy the same features as the mesh-connected endpoints....*” EX1001, 4:5-11. From this disclosure, a POSITA would have understood that the invention is directed at solutions for allowing non-mesh connected users as well as mesh-connected users to participate in a conference in the same way and enjoy the same features. EX2009, ¶82. Similarly, the specification discloses that endpoints “receive multiple video streams and collaboration data 17 from *all other endpoints* participating in a given conference” (EX1001, 5:14-17), which further supports that conference participants is not limited conference participants at mesh-connected endpoints. EX2009, ¶85.

Moreover, Petitioner also interprets “the conference participants” to encompass individuals participating in the videoconference from both mesh-connected and non-mesh connected endpoints. Although Petitioner has not requested claim construction here, in the District Court Litigation—after the Board issued its Institution Decision—Petitioner did request that “the conference participants” be construed and proposed that it be construed as “[i]ndividuals participating in a videoconference from an endpoint.” EX2011, Ex. B at 11; *see also id.*, Ex. B at 12 (Petitioner proposing constructions of terms in Elements [3.1.1]-[3.1.2] and [10.0] that in view of its construction of “the conference participants” further support that these participants include individuals at non-mesh connected endpoints). This is not limited to individuals participating from only mesh-connected endpoints and encompasses individuals participating from non-mesh connected endpoints. *See* EX2009, ¶82.

In addition, Petitioner's expert Dr. Reddy agreed at his deposition that the embodiment described in Column 17 of the '099 Patent is an embodiment of claim 3, which also supports Patent Owner's construction of “the conference participants.” EX2010, 76:6-11; *see also* EX2009, ¶84. This portion of the '099 Patent explains that the disclosed embodiment gives a non-mesh connected endpoint “the advantages of being able to view all the video feeds at reduced size in the film strip.”

EX1001, 17:59-64. A POSITA would also have understood that, as disclosed, this embodiment could include multiple non-mesh connected endpoints. *See* EX2009, ¶84; *see also* EX1001, 17:41-43, 16:2-4, FIG. 8. And as Dr. Reddy agreed, a POSITA would have understood that these non-mesh connected endpoints could provide video feeds. EX2010, 46:2-21; *see also* EX2009, ¶84, EX1001, 17:47-49. Thus, a POSITA would have understood that the embodiment in Column 17 is consistent with Element [3.1.2]'s requirement that the film strip contain video feeds from the mesh-connected and the at least one non-mesh connected conference participants. EX2009, ¶84.

For the reasons above, the Board should adopt Patent Owner's proposed construction of "the conference participants" as "videoconference participants at the at least some mesh-connected endpoints and the at least one non-mesh connected endpoint."

B. ELEMENTS [3.4] AND [10.3]

Elements [3.4] and [10.3] similarly require "[a control connection/a proxy controller] permitting a user located at the non-mesh connected endpoint to select a video feed on the film strip for promotion to full size and to initiate transfer of the full size video feed to the non-mesh connected endpoint." EX1001, 18:42-46, 19:17-21. Consistent with their ordinary and customary meaning to a POSITA, Patent

Owner respectfully submits that these elements should be interpreted to require “[a control connection/a proxy controller] permitting a user located at the non-mesh connected endpoint to select a video feed on the film strip for promotion to full size, initiating transfer of the full size video feed to the non-mesh connected endpoint.” EX2009, ¶87. In other words, the selection of a video feed on the film strip for promotion to full size is what causes and initiates transfer of the full size video feed to the non-mesh connected endpoint. *Id.* Although this term has not been construed by the Parties in the District Court Litigation—because it does not appear that there is a disagreement as to its meaning—Patent Owner addresses the proper construction of this term in response to the Board’s indication in its Institution Decision that further support for Patent Owner’s interpretation would be beneficial. *See* Paper 7, 33-34.

As an initial matter, this construction is consistent with the plain claim language, in particular in comparison to Elements [3.1.1]-[3.1.2]. Elements [3.1.1]-[3.1.2] (and Element [10.0]) first recite “a plurality of endpoints,” and then recite two limitations regarding that plurality of endpoints, each of which is delineated by commas. EX1001, 18:26-32. Indeed, as the Board has already agreed, “element 3.1.2 further limits the claimed ‘plurality of endpoints’” in Element [3.1.1]. Paper 7 at 26 n.13. In contrast, however, the requirements of Elements [3.4] and [10.3] are

not separated by commas. As such, a POSITA would not interpret them as distinct limitations. Rather, a POSITA would have understood that the requirements of the “[control connection/proxy controller] ... to select a video feed ... and to initiate transfer of the full size video feed ...” are not distinct but are causally connected—the initiation of transfer is the result of the selection of the video feed for promotion to full size. EX2009, ¶¶88-89.

This understanding is also supported by the specification. The '099 Patent explains that “[f]or bandwidth considerations, it is undesirable to stream high definition video to the endpoint 84,” which is non-mesh connected, “from each mesh-connected endpoint,” thus “[i]n accordance with the embodiments of the invention it is only necessary to stream the full size feed from the endpoint currently promoted to the main window.” EX1001, 17:49-53, FIG. 10; EX2009, ¶90. Accordingly, the '099 Patent further explains that:

Only reduced size feeds need by [sic] streamed to create the film-strip, either to the endpoint itself or to a browser running on a computer co-located at the endpoint. The user can select a frame on the filmstrip for promotion, and *the promoted feed is then substituted* for the current full sized frame feed.

In this way, the non-mesh connected endpoint is able to benefit from the advantages of being able to view all the video feeds at reduced size in the film strip and select any of the feeds for promotion *without consuming the bandwidth* on the link 89 that would be required to carry all the high definition feeds to the endpoint 84 simultaneously.”

EX1001, 17:54-56 (emphasis added); EX2009, ¶90. From this teaching, a POSITA would have understood that the promotion of a video feed to full size initiates transfer of that full size video feed in order to minimize the bandwidth used by the video feeds. Indeed, a POSITA would have understood that if the promotion of the video feed to full size did not initiate the transfer of the full size video, then all the video feeds would need to be transmitted all the time in order to ensure that they were available for promotion, and this would greatly and unnecessarily increase the bandwidth consumed by the film strip, contrary to the disclosed benefit of the '099 Patent's invention. EX2009, ¶90.

Moreover, the Petition and Dr. Reddy appear to agree with this interpretation of Elements [3.4] and [10.3]. In analyzing these elements, Dr. Reddy repeatedly describes selection of a video feed for promotion to full size as “triggering” transfer of the full size video feed. EX1003, ¶¶126, 139, 260, 272. For example, when analyzing Element [3.4] regarding Ground 1, Dr. Reddy asserts that “[i]n the combination of Setton and Baker, the act of touching or tapping controls what content is displayed on the local participant's display and, as a result, *triggers* the full size video feed to be transmitted to and displayed on the local participant's device.” EX1003, ¶126 (emphasis added). Dr. Reddy makes similar assertions regarding Element [10.3] for Ground 1 and regarding Elements [3.4] and [10.3] for

Ground 3. *See id.*, ¶¶ 139, 260, 272. The Petition likewise describes selection of a video feed for promotion as “*trigger[ing]* the full size video feed to be transmitted to and displayed on the local participant’s device.” Pet., 38 (emphasis added).

For the reasons above, the Board should adopt Patent Owner’s proposed construction of Elements [3.4] and [10.3] as requiring the selection of a video feed on the film strip for promotion to full size to initiate transfer of the full size video feed to the non-mesh connected endpoint.

VI. THE ASSERTED REFERENCES SIMPLY DO NOT DISCLOSE OR SUGGEST THE SUBJECT MATTER OF THE CHALLENGED CLAIMS

As detailed below regarding the Grounds (*infra* Secs. VII-X), the Setton, Baker, and Apostolopoulos references, whether taken alone or in any combination, fail to disclose or suggest the subject matter of the Challenged Claims—a teleconferencing system with mesh and non-mesh connected endpoints that permits the non-mesh connected endpoints to participate in the teleconference in the same or similar manner as the mesh-connected endpoints. EX2009, ¶¶ 32, 97-142.

Rather than providing a teleconferencing system according to the Challenged Claims, Setton’s objective is instead to broadcast a conference feed from a group of active sources in a conference to a group of observers (“relay/receivers”) within a peer-to-peer network. Setton describes that for an endpoint to participate in the

conference, the endpoint must be designated as an active source in the peer-to-peer network and connected in a mesh arrangement to the other active sources—meaning that Setton requires mesh-connections for endpoints to participate in the conference. *Supra*, Sec. III.A. This contrasts with the '099 Patent, which allows a non-mesh connected endpoint to participate in a conference with mesh-connected endpoints without requiring the non-mesh connected endpoint to join the mesh topology like in Setton. *Supra*, Sec. II; *infra* Sec. VII; EX2009, ¶94.

In contrast to the '099 Patent, Baker is focused on user interfaces and systems for presenting video conferences on portable electronic devices (PEDs) with minimal discussion of network topologies. As a result, Baker does not describe a network topology including mesh and non-mesh endpoints, let alone the subject matter of the Challenged Claims of the '099 Patent. Furthermore, while the Petition relies on Baker primarily for its PED user interface features, Baker's lack of network-level detail for implementing user controls through a PED similarly fails to disclose or suggest the subject matter of the Challenged Claims. *Supra*, Sec. III.B; *infra*, Secs. VII, IX; EX2009, ¶95.

Unlike the '099 Patent, Apostolopoulos is almost exclusively directed to providing a three dimensional virtual environment for users to interact with virtual renderings (e.g., avatars) of other users and to an adaptable network topology that

can dynamically adjust to varying processing and network loads related to fluctuations in the number of users participating in the virtual environment. *Supra*, Sec. III.C; EX1007, [0037], [0048]. Apostolopoulos relies on central servers to generate avatars and perform processing on behalf of non-mesh endpoints, from which the central servers are distinct, and then transmit the avatars to endpoints. Any detailed disclosure in Apostolopoulos is thus more akin to a three dimensional gaming environment than a teleconferencing system—presenting a user with “view-dependent” renderings of the other users based on their relative positioning within the three dimensional virtual environment. *Supra*, Sec. III.C. There is no discussion in Apostolopoulos of filmstrips, full size video feeds, or reduced-size video feeds, let alone the subject matter of the Challenged Claims of the '099 Patent permitting non-mesh endpoints to participate in a teleconference in a same or similar manner as mesh-connected endpoints. *Supra*, Sec. III.C; *infra*, Sec. IX; EX2009, ¶96.

Simply put, the asserted references are directed to different problems and different solutions than the '099 Patent. As discussed in greater detail below, the Petition does not grapple with or acknowledge these differences, which results in several significant and clear errors in the Grounds.

VII. GROUND 1 FAILS TO ESTABLISH UNPATENTABILITY OF ANY CHALLENGED CLAIM

A. SETTON IN VIEW OF BAKER DOES NOT DISCLOSE OR SUGGEST ELEMENT [3.1.2], [10.0]

The Petition's proposed combination of Setton with Baker (*see* Pet., 23-27; EX1003, ¶¶81-91) does not disclose, suggest, or render obvious Element [3.1.2] at least because Setton does not disclose or suggest providing video feeds from any of its relay/receivers to anyone else and it would not be obvious to modify Setton to do so. Rather, modifying Setton as the Petition proposes is contrary to Setton's system and the problem it addresses. EX2009, ¶¶104-114.

As an initial matter, and as the Board has agreed, "element 3.1.2 further limits the claimed 'plurality of endpoints.'" Paper 7, 26 n.13. This is apparent from the structure of Elements [3.1.1]-[3.1.2], which first recite "a plurality of endpoints," and then recite two limitations regarding that plurality of endpoints, each of which is delineated by commas. EX1001, 18:26-32. In addition, as set forth above, a POSITA would have understood that "the conference participants" of Element [3.1.2] means "videoconference participants at the at least some mesh-connected endpoints and the at least one non-mesh connected endpoint." *Supra* Sec. V.A. In other words, "the conference participants" are participants at the mesh-connected endpoints and the at least one non-mesh connected endpoint of Element [3.1.1]. This

in turn means that the “film strip with frames containing reduced-size video feeds from the conference participants” must include video feeds from participants at the mesh-connected endpoints and the at least one non-mesh connected endpoint. Accordingly, Ground 1 fails because Setton does not disclose a non-mesh connected endpoint that provides a video feed and it would not be obvious to so modify Setton.

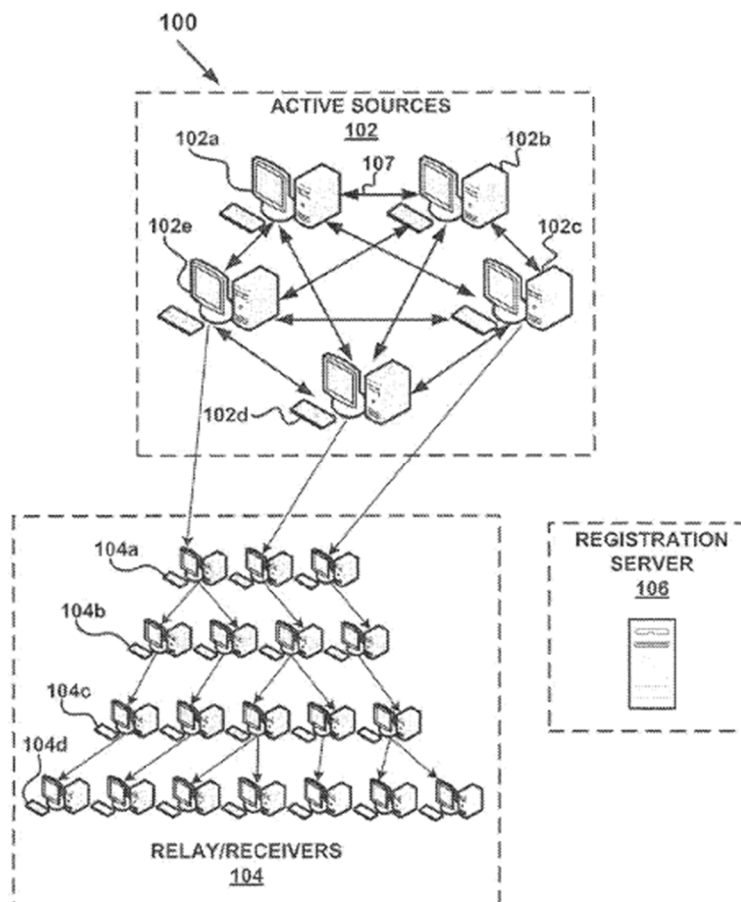
The Petition asserts that Setton's active sources are the claimed “endpoints ... connected in a mesh configuration” and Setton's relay/receivers are the claimed “endpoints ... at least one of which is connected in a non-mesh configuration.” Pet., 20; *see also* EX1003, ¶66; EX2010, 62:12-63:9. Setton's relay/receivers, however, do not generate video streams. EX2009, ¶108. Setton is explicit that:

In embodiments in accordance with the present invention, a peer-to-peer network is defined to have at least two portions. The first portion of the peer-to-peer network is comprised of active sources, and the second portion of the peer-to-peer network is comprised of relay/receivers.

EX1005, [0014]. Setton further makes clear that “embodiments in accordance with the present invention define those peers which generate content (e.g., a video stream, an audio stream, etc.) as active sources (i.e., the first portion of the peer-to-peer network),” (EX1005, ¶16), while “embodiments in accordance with the present invention define those peers who do not generate content as being members of the second portion (i.e., relay/receivers 104).” *Id.*, ¶18. Dr. Reddy admitted at his

deposition that Setton “does define [relay/receivers] as peers who do not generate content.” EX2010, 102:5-103:7.

Further making clear that only Setton's active sources generate video streams, and its relay/receivers do not, Setton depicts its active sources (as shown below) as connected by “bi-directional arrows, typically shown as 107, [which] denote packet exchanges between the active sources (e.g., peers 102a, 102b, 102c, 102d, and 102e).” EX1005, [0023], FIG. 1; *see also* EX2010, 63:10-20 (Dr. Reddy agreed that the arrows between active sources indicate bidirectional communication).



This is in contrast to the relay/receivers 104, shown connected via unidirectional arrows, which a POSITA would have understood to denote only one-way communication. EX2009, ¶¶47-48, 109; *see also* EX2010, 63:21-64:4 (Dr. Reddy agreed that one-way arrows, like those to relay/receivers 104, generally signify unidirectional communication).

Counsel with Haynes and Boone LLP—the same firm representing Petitioner here—have also acknowledged that Setton's relay/receivers do not generate video feeds. Indeed, during prosecution of U.S. Patent Application No. 13/539,584, the Examiners relied on Setton in rejections under 35 U.S.C. § 103(a) to claims for a teleconferencing method. EX2012, pp. 2, 4. Counsel for the applicant with Haynes and Boone LLP argued against these Setton-based rejections in part because “Setton ‘limit[s] the active sources to only those peers who generate content,’ ‘Setton includes other participants in a ‘second portion’ of ‘relay/receivers 104,’ which are ‘those peers who do not generate content,’ and ‘the relay/receivers 104 in the second portion are *unable* to send content *back to* any devices in the first group of active sources 102.’” EX2013, pp. 10, 12 (emphasis in original, internal citations omitted). Moreover, the Office agreed that a “proposed amendment to have terminals both send and receive data with ‘other terminals from among said plurality of terminals’ would overcome the cited prior art for claim 1 (Setton).” EX2014, 2. Thus, for the

reasons above, the Board here rightly agreed that “Setton’s relay/receivers 104 do not transmit video feeds for display at active sources 102” (i.e., Setton’s asserted mesh-connected endpoints). Paper 7, 28.

Moreover, it would not have been obvious to modify Setton such that its relay/receivers would generate video feeds. EX2009, ¶110. As an initial matter, Setton is explicit that its relay/receivers “do not generate content.” EX1005, [0018]. Instead, Setton already provides an express solution to a relay/receiver desiring to generate content—***transitioning*** the non-mesh connected relay/receiver to a mesh-connected active source. EX2009, ¶110; EX1005, [0020], [0026]. Indeed, Setton explains that peers in its peer-to-peer network can “transition between being a member of active sources 102 and relay/receivers 104,” including a relay/receiver transitioning to being an active source. EX1005, [0026]; *see also id.* [0020]. Petitioner’s expert, Dr. Reddy, admitted “if a relay receiver 104 in that second portion wanted to change his or her role to be able to generate content, then they would move up into the active sources mesh configuration.” EX2010, 112:8-13.

Petitioner and Dr. Reddy provide no explanation of why a POSITA would not have simply adhered to Setton’s existing and express solution instead of fundamentally changing its structure and operation. Thus, it would not have been obvious to modify Setton such that relay/receivers could generate content, including

video streams, without becoming mesh-connected active sources. EX2009, ¶110. Rather, such a modification would fly in the face of Setton's fundamental teachings about the operation and structure of its system where relay/receivers do not generate video feeds and must transition to mesh-connected active sources in order to do so. *See Medtronic, Inc. v. Teleflex Innovations SA RL*, 69 F.4th 1341, 1349–50 (Fed. Cir. 2023) (affirming the Board's finding that challenged claims were not obvious in part because "the destruction of [a prior art reference's] 'entire premise' 'counsel[ed] strongly against' obviousness" and noting "we have held it was error for the Board to ignore evidence that a proposed modification would interfere with a reference's stated purpose"); *Plas-Pak Industries, Inc. v. Sulzer Mixpac AG*, 600 Fed. App'x 755, 756, 759 (Fed. Cir. 2015) (affirming decision not to reject claims as obvious and noting "a change in a references 'principle of operation' is unlikely to motivate a person of ordinary skill in the art to pursue a combination with that reference"); *Masimo Corp. v. Apple Inc.*, IPR2023-00807, Paper 10, 19 (PTAB Nov. 21, 2023) (denying institution where "[t]he combination requires that a person of ordinary skill in the art selectively pick portions of each reference while also frustrating the purpose of [the primary reference]'s electrodes of ensuring skin contact by determining a potential difference"); *Samsung Elec. Co., Ltd. v. Staton Techiya, LLC*, IPR2022-00302, Paper 37, 52 (PTAB July 7, 2023) (finding that

proposed combination did not render claim obvious and noting “[w]e also agree with Patent Owner that, in Petitioner’s proposed combination, the above rule that gates off the ear canal microphone would frustrate Allen’s purpose of comparing the signals from the inner and outer microphones to determine a reverse transfer function and perform a seal fit analysis.”).

And as the Board correctly found, “the Petition does not contend that it would have been obvious for relay/receivers 104 to transmit video feeds (*see* Pet. 20-27).” Paper 7, 28. The Petition does not identify or even allege that the combination of Setton and Baker would include non-mesh connected endpoints transmitting “video feeds,” let alone that such non-mesh endpoint “video feeds” would be displayed at “mesh endpoints” as part of “a film strip with frames containing reduced-size video feeds from the conference participants.” EX2009, ¶¶111-112. At most, the Petition asserts that “[a] POSITA would also have recognized the benefits of using Baker’s strip of miniaturized images to display non-speaking participants or audience members in order to ‘maintain very low latency’ and allowing speaking participants to ‘converse naturally.’” Pet., 26-27. But even if true, these non-speaking participants and audience members would be part of the mesh-connected active sources—the only participants in Setton’s system that generate video. EX2009, ¶¶108, 112. Indeed, Setton discloses that “embodiments in accordance with the

present invention also define constraint-burdened peers as active sources” and gives “[a]s an example, a listener to a teleconference who does not wish to speak (i.e., generate content) but who wishes to be ensured prompt delivery of generated content.” EX1005, [0017]. Moreover, because Setton does not teach or disclose relay/receivers generating video feeds, providing even reduced size feeds of relay/receivers would not aid in maintaining low latency or avoiding bandwidth constraints, to the contrary, it would add congestion and increase latency. EX2009, ¶112. Moreover, the Petition does not even contend that it would be obvious to modify Setton’s relay/receivers to generate video feeds. Pet., 20-27.

With regard to Element [3.4]—not Element [3.1.2]—the Petition also alleges that Setton’s relay/receivers could be modified to transmit requests for full size video feeds, which Patent Owner contests below (*infra*, Sec. VII.C), but never alleges that Setton’s relay/receivers would have been modified to transmit “video feeds” for display in “a film strip” on Setton’s active sources. Pet., 33-37. Thus, the Petition does not identify how Element [3.1.2] would be met by the combination of Setton and Baker. EX2009, ¶¶113-114.

For at least the foregoing reasons, Patent Owner submits that the Petition has not carried its burden with regard to Element [3.1.2] and Ground 1 fails to establish the unpatentability of independent claim 3 and its dependent claims 4-6.

B. SETTON IN VIEW OF BAKER DOES NOT DISCLOSE OR SUGGEST ELEMENT [10.0]

The Petition asserts that “[l]imitation [10.0] is substantively identical to limitations [3.0], [3.1.1], and [3.1.2]” and therefore does not separately address this element. Pet., 37.² Thus, for the same reasons that the Petition fails as to Element [3.1.2], it also fails as to Element [10.0]. Moreover, Dr. Reddy acknowledged that although his declaration asserts that Element [10.0] “is substantively identical to limitations [3.0], [3.1.1], and [3.1.2],” these elements are not identical and he “should have been a bit more careful.” EX2010, 55:1-56:4; *see also* EX1003, ¶134. For this additional reason, the Petition has not carried its burden with regard to Element [10.0] and Ground 1 fails to establish the unpatentability of independent claim 10.

² There is no apparent dispute between Petitioner and Patent Owner that limitation [10.0], the Preamble of Claim 10, is limiting. In fact, during claim construction proceedings in the District Court Litigation, both parties have agreed that the Preamble of Claim 10 is limiting. *See* EX2011, 2.

C. SETTON IN VIEW OF BAKER DOES NOT DISCLOSE OR SUGGEST ELEMENTS [3.4], [10.3]

The Petition's proposed combination of Setton with Baker (*see* Pet., 33-39; EX1003, ¶¶119-133, 137-142) does not disclose, suggest, or render obvious Elements [3.4] or [10.3]. EX2009, ¶¶115-121. As addressed above in Section V.B, Elements [3.4] and [10.3] are properly understood as requiring that the selection of a video feed on the film strip for promotion to full size initiates transfer of the full size video feed to the non-mesh connected endpoint. Setton, however, does not disclose or suggest a relay/receiver having the claimed "control connection" such that it has the ability to select a video feed for promotion to full size and thereby initiate transfer of the full size video feed to the relay/receiver. Likewise, it would not be obvious to modify Setton to provide such a control connection because doing so would be contrary to Setton's system and the problem it addresses.

As an initial matter, the Petition does not contend that Setton discloses the claimed "control connection," rather it asserts that it would be obvious to modify Setton to include such a control connection. *See* Pet., 33-39; EX1003, ¶¶119-133. The Petition, however, does not explain why it would allegedly be obvious to combine Setton and Baker in a way that meets the requirements of Elements [3.4] and [10.3]. EX2009, ¶117. Accordingly, the Petition's analysis of Elements [3.4] and [10.3] is insufficient to carry its burden to demonstrate obviousness because it

is rooted in impermissible hindsight—using the claims as a roadmap and relying on conclusory reasoning without considering the teachings of the references “as a whole.” *See Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1568 (Fed. Cir. 1987) (requiring “a prior patent must be considered in its entirety, i.e., as a whole, including portions that would lead away from the invention in suit”); *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1332 (Fed. Cir. 2016) (explicitly applying *Panduit*’s requirements to the PTAB and instructing that the PTAB “must consider the prior art ‘in its entirety, i.e., as a whole’”); *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1362 (Fed. Cir. 2016) (reiterating the Petitioner’s “obligation to explain all material facts relating to a motivation to combine”); *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 1275 (Fed. Cir. 2004) (describing that impermissible “hindsight reasoning” includes “using the invention as a roadmap to find its prior art components,” which “discount[s] the value of combining various existing features or principles in a new way to achieve a new result – often the very definition of invention.”).

Indeed, the Petition’s proposed modification of Setton is not obvious. First, as properly understood, the claimed “control connection” requires that the selection of a video feed for promotion to full size initiates transfer of that full size video feed to the non-mesh connected endpoint. *See supra* Sec. V.B. In other words, a full size

video feed would not be transferred to a non-mesh connected endpoint until the video feed was selected for promotion to full size. Second, as addressed above in Section VII.A, Setton's relay/receivers have only unidirectional communication with the active sources. Thus, the relay/receivers only receive information from the active sources—they do not provide information to the active sources. EX2009, ¶118. Third, Setton teaches that its active sources “aggregate the media streams” of the active sources and “[t]he aggregated stream is transmitted to all the relay/receiver peers via application layer multicast tree(s).” EX1005, [0014]. Setton also explains that “embodiments in accordance with the present invention allow sharing in real-time of K distributed media streams to a large set of users, using only one control plane” and that “[s]uch an approach is much more efficient than using K independent multicast sessions, and such an approach avoids competition among the sources for the peer-to-peer network resources.” EX1005, [0030]; *see also id.*, [0024]. As such, at least each of the relay/receivers in the same multicast tree receive the same aggregated media stream. EX2009, ¶119.

Based on the foregoing, modification of Setton to include the claimed control connection is not obvious because it is inconsistent with Setton's unidirectional, multicast communication to the relay/receivers where relay/receivers receive the same aggregated media stream. EX2009, ¶120; *see also Medtronic*, 69 F.4th at

1349–50; *Plas-Pak*, 600 Fed. App'x at 756, 759; *Masimo Corp. v. Apple Inc.*, IPR2023-00807, Paper 10, 19; *Samsung Elec. Co., Ltd. v. Staton Techiya, LLC*, IPR2022-00302, Paper 37, 52. Setton teaches that its solution to a relay/receiver desiring to have communication with the content-generating active sources it to transition the non-mesh connected relay/receiver to a mesh-connected active source. EX2009, ¶¶53-54, 59, 110; *see also* EX1005, [0020], [0026]. The Petition does not address why a POSITA would allegedly be motivated to modify Setton to provide a different mechanism for communication with the active sources other than hindsight.

Nonetheless, if Setton were modified such that its relay/receivers received reduced size video feeds of the active participate and had the ability to initiate transfer of a full size video stream, then the other relay/receivers receiving the multicast would also receive that full size video stream. EX2009, ¶121. Thus, multiple relay/receivers would unnecessarily receive full size video streams that they did not want to promote to full size, even potentially full size versions of all the video streams. *Id.* The Petition, however, ignores that this is contrary to its assertion that a POSITA would have been motivated to make its proposed combination of Setton and Baker to “‘reduce the size of data streaming’ and allow video streams to ‘be sent with a lower bit-rate/quality’ to save on processing power, and may be ‘decoded at a slower frame rate [*sic*].’” Pet., 32-33; EX2009, ¶121.

For at least the foregoing reasons, Patent Owner submits that the Petition has not carried its burden with regard to Element [3.4] and Ground 1 fails to establish the unpatentability of independent claim 3 and its dependent claims 4-6. Additionally, for at least the same reasons, the Ground 1 also fails with regard to Element [10.3], which the Petition addresses using the same flawed analysis regarding the combination of Setton and Baker as for Element [3.4]. Pet., 38-39.

VIII. GROUND 2 FAILS FOR AT LEAST THE SAME REASONS AS GROUND 1

The Petition's Ground 2 addresses only claims that depend from independent claim 3 and also relies on the combination of Setton and Baker (in addition to a third reference, Wong). Ground 2 fails to carry its burden or establish the unpatentability of any Challenged Claims for at least the same reasons as Ground 1. *Supra*, Sec. VII.

IX. GROUND 3 FAILS TO ESTABLISH UNPATENTABILITY OF ANY CHALLENGED CLAIM

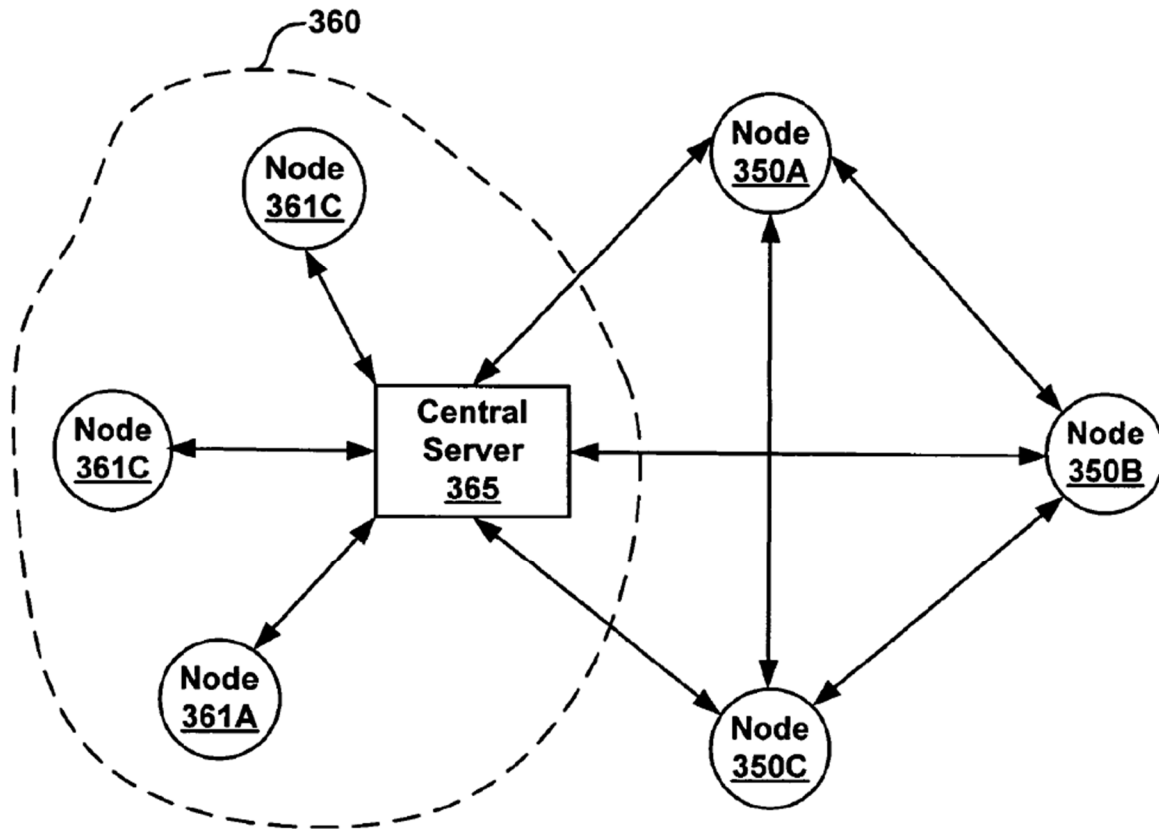
A. APOSTOLOPOULOS IN VIEW OF BAKER DOES NOT DISCLOSE OR SUGGEST ELEMENT [3.1.1], [10.0]

The Petition's proposed combination of Apostolopoulos with Baker (*see* Pet.,

54-58, 69; EX1003, ¶¶208-226) fails as to Elements [3.1.1] and [10.0]³. In this Ground, the Petition relies on Apostolopoulos alone as allegedly rendering obvious Element [3.1.1] and the corresponding aspect of Element [10.0] (Pet., 58, 69; EX1003, ¶¶226, 267), but Apostolopoulos does not disclose, suggest, or render obvious Elements [3.1.1] or [10.0] at least because Apostolopoulos does not disclose, suggest, or render obvious a non-mesh connected endpoint connected “to a selected one of the mesh-connected endpoints” as required by these elements. EX2009, ¶¶125-135.

As an initial matter, Apostolopoulos does not disclose a non-mesh connected endpoint connected “to a selected one of the mesh-connected endpoints,” and the Petition does not assert otherwise. Pet., 55-56. For example, Apostolopoulos's FIG. 3C, relied on in the Petition and shown below, only discloses the non-mesh connected endpoints (nodes 361A and 361C) as connected to central server 365.

³ As noted above, both parties have agreed in the District Court Litigation that Element [10.0], the Preamble of Claim 10, is limiting. EX2011, 2.



EX1007, [0069], FIG. 3C. Apostolopoulos also makes clear that “[i]n the star [i.e., non-mesh] topology, communication between each of the collaborators is funneled through the central node/server 330.” EX1007, [0057]; FIG. 2B. Apostolopoulos similarly discloses that the non-mesh nodes/endpoints in its hybrid topologies are connected to central servers that in turn are “connected to other nodes that are running a full-mesh topology.” EX1007, [0069], [0071]; EX2009, ¶127.

Moreover, Apostolopoulos distinguishes between central servers and nodes (i.e., endpoints) associated with collaborators using its system. Indeed, as to FIG. 3C

Apostolopoulos discloses that “the central server/node 365 provides the processing power for generating communication data streams for the collaborators at nodes 361A-C to communicate amongst themselves, as well as with the collaborators at nodes 350A-C.” EX1007, [0070]. Likewise, Apostolopoulos distinguishes between the central servers and nodes (i.e., endpoints) in FIG. 3D, the only other hybrid topology it discloses. *Id.*, [0072]. Thus, Apostolopoulos is clear that its central servers are not endpoints and does not disclose a non-mesh (i.e., star) connected endpoint connected “to a selected one of the mesh-connected endpoints) as required by Elements [3.1.1] and [10.0]. EX2009, ¶128.

Apostolopoulos also does not suggest or render obvious incorporating its central server into a mesh-connected endpoint, as the Board has rightly preliminarily agreed. EX2009, ¶¶129-135, Paper 7, 39 (“At this stage, we also do not agree with Petitioner’s contention that Apostolopoulos suggests (or otherwise motivates) incorporating central server 365 into one of the nodes.”). Apostolopoulos explains that “[a]t the local level, computational complexity scales with the number of participants,” therefore “as the number *N* of participants increases, the computational capacity of the local computer may be exceeded.” EX1007, [0004]. Accordingly, Apostolopoulos explains that its system is intended to allow “immersive communication systems [to] be able to scale to larger values of *N*.”

EX1007, [0006]. In other words, the goal of Apostolopoulos's system is to allow more participants to participate in a communication system. EX2009, ¶130.

Apostolopoulos's system accomplishes this goal by using central servers that alleviate the computational load on endpoints. EX2009, ¶129. Indeed, Apostolopoulos discloses that "the central server/node 365 provides the processing power for generating communication data streams for the collaborators at [non-mesh] nodes 361A-C." EX1007, [0070]. Apostolopoulos further discloses that "in the star [i.e., non-mesh] topology, each collaborator sends information to a central node 330 which then generates the perspectives for each collaborator and then transmits the information to each collaborator," thus "the central node 330 needs to be quite powerful." *Id.*, [0059]. Accordingly, Apostolopoulos's central servers/nodes accomplish its "goal" "to allow very low complexity collaboration computers to participate in the N-way collaborative environment" and its goal to increase the number of participants that can participate. EX1007, [0060]; EX2009, ¶¶129-130.

The processing power supplied by the central server requires hardware, and thus imposes physical requirements on the central servers. EX2009, ¶131. Moreover, as recognized by the Petition, a central feature of the Apostolopoulos system is that it "provides for dynamic topology changes such that 'computation is

moved dynamically, as necessary, to meet various constraints, such as, computation, bandwidth, or low-power constraints.’” Pet., 56 (quoting EX1007, [0048]). This dynamic topology in turn allows any endpoint in the system to switch between being mesh-connected and non-mesh connected, which makes it impractical and not obvious to incorporate Apostolopoulos’s central server, and associated hardware requirements, into an endpoint. EX2009, ¶131.

Because Apostolopoulos’s system allows for variable numbers of endpoints to participate, does not require any specific endpoint to participate, and allows variable types of endpoints to participate (e.g., laptops, cell phones, etc.), if the central server capability was provided by endpoints, the only way to ensure this capability was available would be to require it in every endpoint. EX2009, ¶131. But this is impractical and would defeat the purpose of the central server capability. As an initial matter, requiring the central server capability and processing power in every endpoint would limit the devices that can be endpoints in the system and would likely preclude “low processing power” devices, such as cell phones, which Apostolopoulos specifically seeks to accommodate as participating endpoints. EX1007, [0058]. This would also increase the cost of devices that could participate as endpoints by adding processing hardware, which is generally a relatively expensive component in a computing device. Moreover, if the central server

processing capability were included in every endpoint, this would eliminate the need for servers that can perform processing for other endpoints, because each endpoint would be able to accommodate its own processing demands. Thus, such a modification is not obvious because it would frustrate the goal and design of Apostolopoulos's system, which is to permit dynamic topology changes facilitated by central servers. EX2009, ¶131; *see also Medtronic*, 69 F.4th at 1349–50; *Plas-Pak*, 600 Fed. App'x at 756, 759; *Masimo Corp. v. Apple Inc.*, IPR2023-00807, Paper 10, 19; *Samsung Elec. Co., Ltd. v. Staton Techiya, LLC*, IPR2022-00302, Paper 37, 52.

In addition to Apostolopoulos's standalone central servers facilitating its dynamic topology, Apostolopoulos also explains that use of such servers provides the benefit of allowing “confidentiality [to] be introduced” because “when a central node performs the view-dependent processing for a local collaborator, this removes the requirement that each node knows about the other nodes involved in the collaboration.” EX1007, [0088]. As such, this teaches away from incorporating the central server capability into an endpoint because doing so would allow the server/endpoint providing the processing capability to know about any endpoints it was communicating with. EX2009, ¶132. The Petition, however, does not even address this teaching away.

Furthermore, the Petition's assertions that it is obvious to incorporate Apostolopoulos's central servers into mesh-connected endpoints because this was "well-known in the art" and "would provide a more flexible network configuration" are unavailing. Pet., 57-58; *see also* EX1003, ¶¶222-223. As addressed above, this proposed modification to Apostolopoulos would not provide more network flexibility, rather it would limit the devices/endpoints that could participate, increase their cost, and would frustrate the purpose of the central servers. Moreover, Apostolopoulos already discloses a flexible network configuration that can accommodate a variable number of users through topology changes.

In addition, the references the Petition relies on as supporting the proposed modification as "well-known in the art"—i.e., Baker and Kenoyer—do not support this. *See* Pet., 57. First, the Petition's relied upon disclosure in Baker that the centralized "computing device 302 can be operated by one of the remote participants or can be located at a separate location" only teaches that this device could be physically located near an endpoint—it does not teach or disclose that the centralized computing device is incorporated within an endpoint. EX2009, ¶133. Moreover, Baker's disclosure that each participant in the conference has "a computing device that runs a client-side video conferencing application that sends video and audio data streams generated by the participant to a centralized computing device 302 *via the*

network 100” distinguishes between the endpoint computing devices and the centralized computing device and demonstrates that they are distinct because the endpoints send the video/audio streams to the centralized computing device through the network. EX1006, 3:58-63 (emphasis added); EX2009, ¶133. Thus, Baker does not disclose that its own “centralized computing device” is incorporated within an endpoint, much less support that it was well-known or obvious to incorporate Apostolopoulos’s central server into a mesh-connected endpoint. EX2009, ¶133.

As an initial matter regarding Kenoyer, the Petition does not identify Kenoyer as part of Ground 3, and it is unclear whether the Petition is intending to rely on Kenoyer as an additional or alternate secondary reference in Ground 3. Accordingly, the Petition has not asserted Kenoyer “with particularity” for it to be relied on as part of Ground 3 in the event that Baker’s teachings are found to be deficient. *Adaptics Ltd. v. Perfect Company*, IPR2018-01596, Paper No. 20, pp. 15-16 (PTAB Mar. 6, 2019) (informative) (a petition “must identify ‘with particularity . . . the evidence that supports the grounds for the challenge to each claim’” (quoting 35 U.S.C. 312(a)(3)); see also *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,763 (Aug. 14, 2012) (petitioners should “avoid submitting a repository of all the information that a judge could possibly consider”).

Additionally, Kenoyer does not support the Petition's assertions. Although Kenoyer teaches that a "Multipoint Control Unit (MCU)" may be incorporated into an endpoint, neither the Petition nor the Reddy Declaration include any comparison of Kenoyer's MCU with Apostolopoulos's central server, nor do they explain how incorporation of Kenoyer's MCU into an endpoint makes it obvious to incorporate Apostolopoulos's central server into an endpoint. *See* Pet., 57; EX1003, ¶223. A POSITA would have also understood that Kenoyer's MCU is very different from Apostolopoulos's central server. EX2009, ¶134. Unlike Apostolopoulos's central servers that provide processing capability for non-mesh endpoints, Kenoyer's MCU consolidates video streams and can transcode and appropriately scale them for the recipient's monitor. This can be accomplished with only software and does not require additional processing hardware or power like Apostolopoulos's central server. *E.g.*, EX1008, 5:4-67; EX2009, ¶134. Thus, inclusion of Kenoyer's MCU into an endpoint does not support that it was well-known or obvious to incorporate Apostolopoulos's central server into one of its mesh-connected endpoints. EX2009, ¶134.

For at least the foregoing reasons, Patent Owner submits that the Petition has not carried its burden with regard to Element [3.1.1] and Ground 3 fails to establish the unpatentability of independent claim 3 and its dependent claims 4-6.

Additionally, for at least the same reasons, Ground 3 also fails with regard to Element [10.0], which the Petition did not address separately from Element [3.1.1]. *See* Pet., 69. As such, the Petition also fails to establish the unpatentability of independent claim 10.

B. A POSITA WOULD NOT COMBINE APOSTOLOPOULOS WITH BAKER TO ARRIVE AT THE CLAIMED INVENTIONS

The Petition's proposed combination of Apostolopoulos with Baker (*see* Pet., 51-53, 59-60, 66-71) fails to establish a motivation to combine these references to arrive at the inventions of the Challenged Claims, in particular the filmstrip requirements of Elements [3.1.2], [3.4], [10.0], and [10.3]. The Petition fails to establish that a POSITA would have plucked Baker from the sea of prior art references and been motivated to modify the asserted portions of Apostolopoulos based on Baker's teachings. *See WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1337 (Fed. Cir. 2016) (explaining that "[t]he real question" in the obviousness analysis "is whether th[e] skilled artisan would have plucked one reference out of the sea of prior art ... and combined it with conventional ... elements to address some need present in the field"). Indeed, the Petition asserts and relies on portions of Apostolopoulos that are directed to a three dimensional virtual environment for users to interact with virtual renderings (e.g., avatars) of other users. However, the Petition provides no explanation as to how or why a POSITA would have been prompted to modify the

asserted three dimensional virtual environment from Apostolopoulos—the starting point for its obviousness grounds—to either be replaced by or to include the filmstrip described by Baker.

“[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, (Fed. Cir. 2015) (emphasis in original). Merely recognizing alternatives that were known, does not provide a motivation to combine or make combining features of different references obvious. *See Virtek Vision Int’l ULC v. Assembly Guidance Systems, Inc.*, 97 F.4th 882, 886 (Fed. Cir. 2014) (reversing finding of obviousness). Nonetheless, the Petition does not explain *why* a POSITA would have purportedly been motivated to make the proposed combination.

The '099 Patent indicates that systems providing three dimensional virtual environments, like that described in the asserted portions of Apostolopoulos, are different from systems providing “a film strip containing reduced-size video feeds from the conference participants,” as recited in Elements [3.1.2] and [10.0]. For example, the background section of the '099 patent describes other “approaches [that] have been considered in the prior art,” including “3D video conferencing technologies” and “emulations of 3D environments.” EX1001, 2:48-62. One of the

references called out in the background section regarding 3D conferencing and cited during prosecution of the '099 patent describes “virtual video conferencing, where multiple distant participants can meet in a virtual room” through “use of a synthetic 3-D computer graphics scene” and “video objects [of participants that] are inserted into the artificial scene.” EX2015, Abstract. An example of such a virtual video conference with objects of participants being inserted into a “virtual room” is presented below:



EX2015, Fig. 2.

The portions of Apostolopoulos asserted in the Petition and by Dr. Reddy are directed to such three-dimensional virtual environments with view-dependent renderings. *See, e.g.,* Pet., 49-56 (asserting EX1007, [0025], [0032], [0054],

[0070]); EX1003, ¶¶189, 191, 193, 195-196, 228 (asserting EX1007, [0025]-[0028], [0032], [0054], [0070]). For example, the Petition asserts the “N-way collaborative video conference” and “N-way collaborative environment” embodiments from Apostolopoulos. *See, e.g.,* Pet., 49, 53, 61, 74; EX1003, ¶¶191, 228, 237. Apostolopoulos defines an “N-way collaborative environment” as “a view dependent three-dimensional virtual environment” in which “images in real-time of a sending collaborator (e.g., a sending collaborator) are generated from the viewpoints of receiving collaborator (e.g., receiving collaborator) within the virtual N-way collaborative environment,” and “images are generated by new view synthesis techniques.” EX1007, [0026]. The only instance where the term “N-way collaborative video conference” is used is as an illustrative example of an “N-way collaborative environment.” *Id.*, [0032] (“an N-way collaborative environment (e.g., an N-way collaborative video conference)”).

Furthermore, Apostolopoulos is clear that the communication topologies presented in FIGS. 3A-3C, which are asserted in the Petition and Reddy Declaration (*see, e.g.,* Pet., 54-58), “support communication between nodes in an N-way collaborative environment.” EX1007, [0010]-[0012], [0052]. This is bolstered by Apostolopoulos's statement that its technical field relates “to a method and system for topology adaptation to support communication in a *virtual environment*,” which

Dr. Reddy confirmed means “three-dimensional virtual reality.” *Id.*, [0002]; EX2010, 118:2-20.

Dr. Reddy confirmed during his deposition that several asserted portions of Apostolopoulos are directed to three-dimensional virtual environments that provide view dependent renderings, including Apostolopoulos' paragraphs [0025]-[0028], [0032], [0054], and [0070]. EX2010, 131:15-21, 133:12-134:21, 135:4-136:4, 142:1-143:14.

In addition, other asserted portions of Apostolopoulos are directed to three-dimensional virtual environments. For example, in paragraph [0080] Apostolopoulos describes “generating view dependent video image streams” of “objects (which are collaborators in the N-way collaborative environment) . . . [which] can be expressed as a two-dimensional (2-D) image with potentially arbitrary shape (e.g., head-and-shoulders shape)” that “portrays 3-D spatial position, perspective warping, and movement as a function of time.” EX1007, [0080]. Asserted paragraphs [0082] and [0083] present additional embodiments building on this 3D “object” discussion from paragraph [0080]. *See id.*, [0082] (describing “generat[ing] an avatar”), [0083] (“N head-and-shoulder objects when N people are collaborating”).

Accordingly, the Petition has asserted embodiments of Apostolopoulos that provide a three-dimensional virtual environment. But the Petition provides no motivation or sufficient rationale as to why a POSITA would have taken the extensive discussion in the asserted portions of Apostolopoulos regarding representing and rendering view dependent images of participants, such as through avatars, in a three dimensional virtual environment, and jettisoned all of those features in favor of Baker's filmstrip. EX2009, ¶¶122-124. Instead, it appears that the Petition has used the claims as a roadmap—cherry-picking portions of Apostolopoulos that support its narrative on obviousness (while ignoring unfavorable portions) and then supplementing with teachings from Baker.

As the Board has routinely held, “a petitioner *must* make its case-in-chief in the petition” and the petition must “identify ‘with particularity’ the ‘evidence that supports the ground for the challenge to each claim.’ 35 U.S.C. § 312(a)(3).” *PeakLogic, Inc. v. Wave Neuroscience, Inc.*, Case IPR2022-01527, Paper 13 at 4-5 (PTAB May 18, 2023); *Intelligent BioSys., Inc., v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369–70 (Fed. Cir. 2016); *see also Hulu, LLC v. Sound View Innovations, LLC*, Case IPR2018-01039, Paper 29 at 6–7 (PTAB Dec. 20, 2019) (precedential) (discussing § 312(a)); Consolidated Trial Practice Guide November 2019 at 74–75 (“It is also improper for a reply to present new evidence

(including new expert testimony) that could have been presented in a prior filing, for example newly cited prior art references intended to ‘gap-fill’ by teaching a claim element that was not present in the prior art presented with the petition.”).

Accordingly, the Petition has failed to carry its burden to establish a *prima facie* case of obviousness, and any subsequent attempts to gap-fill with additional evidence would be improper for the Board to consider.

X. GROUND 4 FAILS FOR AT LEAST THE SAME REASONS AS GROUND 3

The Petition's Ground 4 addresses only claims that depend from independent claim 3 and also relies on the combination of Apostolopoulos and Baker (in addition to a third reference, Wong). Ground 4 fails to carry its burden or establish the unpatentability of any Challenged Claims for at least the same reasons as Ground 3.

Supra, Sec. IX.

XI. CONCLUSION

For at least the reasons articulated above, the Petition fails to establish that any of challenged claims 3-6, and 10 of the '099 Patent are invalid as obvious or otherwise unpatentable. Accordingly, the Board should deny the Petition's request to cancel claims 3-6 and 10.

Patent Owner does not concede any issues not addressed or raised in this Response.

IPR2024-00194 (Patent 9,204,099)

Patent Owner's Response

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing PATENT OWNER'S RESPONSE TO PETITION contains 13,637 words, which is less than the 14,000 word limit, as determined by the word count feature of the word-processing system used to prepare this paper.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that on July 5, 2024, I caused a true and correct copy of the foregoing PATENT OWNER VIDEO SOLUTIONS PTE. LTD. PRELIMINARY RESPONSE TO PETITION, together with all exhibits filed therewith, to be served via e-mail on the following counsel of record for Petitioners:

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